God's Grand Design
Class #10
How do we explain the geological column?
Genesis 5:28 – 9:19
Josh Whitney
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The Rock Church

(pray, pause, breath)

INTRODUCTION

Good evening everyone. Welcome to our next God's Grand Design. My name is Josh Whitney. I am one of the pastors at the Rock.

This is part 10. We will be digging into this question, How do we explain the geologic column?

So we are moving into geology now. And I am pretty excited. I have been practicing geotechnical engineering for 24 years.

So why does this topic of the geological column matter? I want to start with the verse we ended with last class. 2 Peter 3:5 For they deliberately overlook this fact, that the heavens existed long ago, and the earth was formed out of water and through water by the word of God, 6 and that by means of these the world that then existed was deluged with water and perished. 7 But by the same word the heavens and earth that now exist are stored up for fire, being kept until the day of judgment and destruction of the ungodly.

We are talking about the global flood. Did it happen or not? Do we see evidence of God's judgement all around the planet? This is Monument Valley down on the Utah/Arizona border.

There are two very different views to explain this.

In the conventional view, for hundreds of millions of years, material was deposited layer upon layer of sediment which cemented into rock. And then natural forces of wind and water eroded the land for 50 million years cutting into the rock.

The other view, that God created the world. And then later, God flooded the world in a global flood. A flood that covered the highest mountains. These layers were primarily deposited and then eroded in the flood. This beautiful area is actually a monument to God's judgement of the earth.

That is why the geological column matters.

That is where we are going tonight! What conclusions we can draw from studying the rock layers?

A couple housekeeping things, if you are new and not on my email list, send me an email and I will add you to the class list.

One more housekeeping item, next week, about 80 to 90 of us are going to see this movie. The ticket link is on the google sheet that I email out.

The Ark and the Darkness
Megaplex Theatres - The District
11400 South Bangerter Highway, South Jordan, UT
Wed. Mar 20 at 7:00 PM

So let's start with prayer.

OVERVIEW

Let's look at our key overview slide. In this class, we are comparing two different views of origins, where did everything come from.

View #1 – God created the heavens and the earth. (in six days, thousands of years ago)

View #1 makes the most sense, biblically and scientifically. And that is what this class is all about.

And View #2. The heavens and earth evolved without God. (millions and billions of years ago)

View #2 is the dominant view in our world. In textbooks, in classes, and tv shows, and museums.

WAS THERE A GLOBAL FLOOD?

Last week, I read this paragraph to introduce this season 2 on the flood. This would be our doctrinal statement on the flood based on Gen. 6-9.

Flood. There was a time when the entire world was covered with water as the result of a year-long Flood. This was a judgment from God on all human and land dwelling life. It resulted in the death of all humans (and animals) who were not in the Ark during the Flood (Genesis 6-9).

We covered the scriptural basis for this last week. Listen to part 9 if you missed it.

GEOLOGY

We are digging deep into geology tonight. What is geology?

Here is a simple definition. Geology the study of the earth's physical structures, it's history and the processes that form them.

So we are studying the history of the earth as recorded in the rocks. And does geology show evidence of a global flood (God's judgment) or slow and gradual processes over millions of years (without God)?

Like we talked about last class, as we drive around Utah, we see evidence of ice age glaciers, marine fossils high in the mountains, ancient lava flows, volcanic ash, shorelines of ancient lake, and massive dinosaur burial grounds.

We need a model of earth history to explain all of that.

That's geology and it links directly to our understanding of the God's watery judgment as presented in Genesis 6 through 9.

This chart adds more details to our two views.

View #1 - Creation View
A one-year Global Flood happened about 4,500 years ago.
The earth's surface was shaped by sudden, violent, and catastrophic processes.
Catastrophism
The past (the Flood) is the key to the present.
Lots of water, little time

View #2 - Evolutionary View
A Global Flood never happened.
The earth's surface was shaped by slow, gradual processes over 4.5 billion years.
Uniformitarianism
The present is the key to the past
Lots of time, little water

Those are the two very different views.

Let's dig into the geological column. What is that? The Geological Column is simply the representation of the layers of rock that make up the earth's crust. We will come back to this.

So here is an example of an old earth, evolutionary geological column. When you hear geological column, just think the stack of rock. On the left there, there are some words that are familiar to use. Precambrian. Paleozoic. Mesozoic. Tertiary. Quaternary.

And you see the conventional, old earth ages. 4 billion years ago, then hundreds of millions of years, to more recent.

You should know this is a generalized profile. There is no where on the earth that has all of these layers stacked like this. But this is a generalized geological column from an evolutionary old earth perspective.

Well what about radiometric dating Josh? We discussed this in class 6. We talked about the assumptions and problems with radiometric dating and young earth dating methods as well. Go listen to that lecture if you missed it. Bottom-line, the ages presented so definitely by radiometric dating are not as accurate as we might be led to believe.

Let's start learning about the geological column. The first thing you need to know is that the geologic column is generally made up of 3 kinds of rock. Those are igneous, metamorphic and sedimentary.

First igneous, like our word ignite. Think fire, lava, magma. Here is a sample. You see the black lava is this diagram. Formed deep in the earth, comes up to the surface through lava.

Second, metamorphic. What does meta mean? Means to change form. Basically, heat and pressure have cooked, squeezed, or changed rock from one kind to another.

How many of you have a pressure cooker? Metamorphic rock has gone through a pressure cooker. You see quartzite, light brown on the diagram. Here is a sample of a metamorphic rock. Again, this rock is formed deep in the earth. These are the granites. These are the basement rocks of the continents. Everything is built up on these.

These are creation Rocks. These are rocks miraculously created by God during the creation week. In Genesis 1, on Day 3, the dry land appeared in one day.

And third, sedimentary rock. That is sediment. That is sand and gravel and clay and silt that has been deposited by water and cemented together to form sedimentary rock. And on the diagram. that is basically everything from the Tapeats sandstone up. And here is a sample of sedimentary rock.

The sedimentary rock is formed at the surface. These are the water deposited rocks covering the continental basement rocks. These are flood rocks. You see the line, flood boundary, the great unconformity. That is the flood line.

So you have the rocks created during creation. You have the flood which grinds those rocks down to the great unconformity, or the flood boundary. And then the sedimentary layers are deposited.

Igneous, fire.
Metamorphic pressure cooker.
And sedimentary rock, water deposited.

SHOW DEMONSTRATION

Now we are going to focus in on sedimentary rock. Sedimentary rock is typically composed of sediment like mud and sand and gravel that has changed into rock, primarily formed under water.

This is the most important rock when we talk about the surface of the earth.

Why? Observation: 70-75% of the planet is covered with 1.0 to 1.2 miles of sedimentary rock. That is an average, more or less in areas.

Think of sedimentary rocks like a stack of pancakes. This lecture, we are talking about how the pancakes got stacked. Next lecture, we will talk about how the pancakes got eroded.

Did you read that? ¾ of the planet is covered with a mile of water deposited rock. That is significant. Where did that come from?

Let's watch a video. This is an evolutionary, old earth view on where all of the sedimentary rock came from.

https://www.youtube.com/watch?v=SuNfbEDMOQs&ab_channel=StMarysScience

0:07 - 2:15

concrete photo. According to this video, slow gradual processes over hundreds of millions of years explain the mile of sedimentary rock that covers the planet.

We are not denying that these processes of erosion and deposition are happening on the earth today. We are simply asking the question are they the best explanation for majority of the earth's surface.

This is water and sand, but you get the idea. One way to think of sedimentary rock is like concrete.

What is concrete made of? Concrete on the left, sedimentary rock on the right. Concrete is a mix of sand, gravel, and cement which locks in water it all into concrete. How long does it take concrete to form? Day, weeks, months, to get to full strength.

Sedimentary rock is like God's concrete, on the right. It is a mix of sand, gravel, silts, clays, all cemented together in water.

When I was in the Grand Canyon in 2017, there was sand that had cemented into rocks in a matter of 5 months. I banged on it. It was a rock. It had formed from loose sand cemented to rock in 5 months.

This is a tangent. You might ask yourself this. How do we know what is happening underground?

The first way we know what is happening underground is we drill. Fun fact. What is the deepest anyone has ever drilled? The Russian Kola Superdeep Borehole SG-3 drilled 7.6 miles reached in 1989. Way to go Russia.

By way of comparison, most of my geotech reports I write, we only drill 20 to 40 feet deep for most borings, maybe 100 feet deep for a skyscraper. We are just barely scratching the surface of the earth.

How deep is 7.6 miles compared to the radius of the earth? About 4,000 miles. So the deepest boring the Russians ever drilled was 0.2% of the way into the earth. We have barely scratched the surface. Then how do we know that stuff, about the crust, mantle and core. That gets into earthquakes, seismographs and plate tectonics. That's a future lecture.

So you might be thinking, who besides the Russians, cares about what is happening deep underground? The oil and gas companies. They are drilling 7,800 feet deep on average. So our data on what is happening underground primarily comes from the oil and gas companies.

Let's not miss the forest for the trees. Observation: 70-75% of the planet is covered with 1.0 to 1.2 miles of sedimentary rock. And we know this because of oil and gas companies.

So a few more basics of geology before we look at the evidence in the actual column.

These are helpful to understand what we are looking.

Geological Laws

A. Super position. Which layer was laid down first? G. And then F, and then E. And so on. Makes sense?

B. Lateral Continuity. What does that mean? At one point, these layers were connected across this canyon and a lot of material was washed away in the middle. Makes sense?

C. Original Horizontality. Sediment that settled out of water would originally be horizontal. So if it is tilted or bent. That happened after it was deposited. Makes sense?

D. Cross-cutting relationships. If something cuts through layers, that would have happened after the layers were deposited. Makes sense?

See now you are becoming geologists. Let's look at some examples of geology from around Utah and the world.

Let's start with Utah and Colorado. Now we first, know this data primarily comes from oil and gas companies.

Second, you need to know there is incredible vertical exaggeration. How far is it from Nevada/Utah border to the Colorado/Kansas border? About 650 miles. And what is the actual elevation change vertical? About 2 miles.

In this room, that would be about 3 inches. So we are talking about something that is very flat. But they stretch it vertically, so we can see what is going on.

And what is going on? You see the brown area underneath. That is the crystalline basement rock of the continent. The metamorphic rock.

You see the vertical lines. Those are faults. Or breaks in the continent. We will get into this in later classes. Uplift where mountains were formed.

And then the different colors on top, blues, greens and oranges, are primarily the sedimentary rock on top of the metamorphic rocks. Parts went up and parts went down. And sedimentary rock was deposited and washed away.

Let's move over to Kansas. Don't forget the vertical exaggeration. Kansas is as flat as a pancake. But we see the same structure. There is the green, metamorphic, crystalline basement rock of the continent. With sedimentary layers deposited on top of this. And you see one vertical line, again, that is a fault.

And finally, let's go to Virginia. Same comments. Vertical exaggeration, so we can see features. The darker lines are breaks or faults. You see the crystalline basement rocks, the core of the continents. Covered by lots of sedimentary layers. But one unique thing, is we see a sheet of coastal sediments that was washed off the continent into the Atlantic Ocean.

We will get into the continental shelf in a future lecture. It's fascinating.

Nobody thinks about geology on a continental level. Everyone thinks locally. The layers of rock tend have a regional name, local names, and yet many of these layers span North America.

Again, why does this matter? The dominant view is that this happened over millions and billions of years without God.

But as we read our Bible, we see God created the world and then God judged the world through a global flood.

In the global flood model as presented in Genesis 6-9. We have a catastrophic global flood that last about a year and it covered the entire planet. The water advances or went up for 150 days. Then crests, 20 some feet over the tallest mountains, and then starts lowering for the next 220 days.

During the flooding stage the flood waters were depositing the sedimentary rock all around the planet. Stacking the pancakes.

During the retreating stage, the flood waters were eroding the planet. Cutting the pancakes.

This event would have radically retooled the surface of our planet.

Some have asked, is there enough water to flood the earth? Do you know how much water there is? What if you could raise the oceans and lower the mountains? Make it as smooth as a pool

ball. How deep would the water be around the entire planet? I calculated about about 9,000 feet deep!

Here is what the Jacques Cousteau the famous French naval officer, oceanographer and film maker said. Were the crust of Earth to be leveled-with great mountain ranges like the Himalayas and ocean abysses like the Mariana Trench evened out-no land at all would show above the surface of the sea. Earth would be covered by a uniform sheet of water-more than 10,000 feet deep! So overwhelming the ocean seems to be." Jacques Cousteau

So there is plenty of water to flood the earth. It's all sitting in the oceans right now. Remember 70% of the planet is covered by oceans.

OK, I want to show you a video, 7 minutes long. This is Dr. Steve Austin. He is a young earth creation geologist. This video will review in some concepts we have just covered and preview the next concepts. It is good to hear some of these ideas from different voices to help you learn. This is 7 minutes long.

https://www.youtube.com/watch?v=UM82qxxskZE&t=701s&ab_channel=IsGenesisHistory%3F

4:22-11:29

So let's get into our evidence. Let's look at the geological column. Remember this is evidence that God flooded the whole earth. I want to look at 5 evidences for a global flood found in the rock layers.

Evidence #1 for a global flood in the geological column. Lack of erosion between layers.

So what would you expect to see if the layers were laid down gradually over millions and billions of years?

You would expect A. a series of successive sedimentary deposits. Then (B) Erosion occurs when the sediments are exposed to water drainage. And then (C) Sedimentation resumes, filling and preserving the old erosional channels. (D) A second cycle of erosion and deposition. And so on. You would expect the geological column to look like D. Ultimately.

But what do we actually see, E. We see E all over the planet.

If the earth was millions and billions of years old, you would expect to see D everywhere. But we see E everywhere.

Let's look at some examples.

Let's go down to Canyonlands National Park by Moab, Utah. This photo really illustrates the point I am trying to make. You see of in the distance, everything is flat and horizontal. No signs of erosion of the existing layers. Of course incredible erosion now through the layers.

Let's go back to this drawing. What do we expect to see, D? What do we actually see, E?

Another example, This is The hill of seven colors in Argentina. The knife edge between these layers is a striking piece of evidence for a lack of erosion (or time) between these layers. They were laid down one after another with no erosion.

Another example, back to Utah. This is the Chocolate Cliffs near Hurricane. Notice the knife edge between the layers and the total lack of erosion.

A subpoint within this is bioturbation. Worms, gophers, plants would break the layers. The lack of bioturbation between the layers. (the disturbance of the layers by living organisms)

I have been battling gophers in my yard for the last few years.

There is a lack of bioturbation throughout the column.

Another example, the Grand Canyon. The Edwards Family was there just a few weeks ago. Notice the layers of sedimentary rock are totally flat. They have been eroded away. What mechanism lays down flat layers with no erosion? One layer after another in quick succession with no erosion of the individual layers.

Slow and gradual processes or catastrophic global flooding?

So what is happening in the global flood model? Layers deposited rapidly in a flood with no time for erosion between layers. Basically multiple layers are being deposited from the same event.

In the global flood, God's judgment came too fast and rapidly so there was no time for erosion between the layers.

The next piece of evidence. Evidence for a Global Flood in the geological column: B. Continental wide layers. We are told in the old earth evolutionary model. A stream formed this feature. A lake formed that feature. One drop of water at a time. One sand grain at a time. Over millions of years, these rock layers were built.

But when we look at the scale of the layers, it doesn't make sense. Where are the rivers and lakes laying down continental wide sedimentary layers? You should know, sedimentary layers like this are not being deposited on the ocean floor either.

Look at the 1st megasequence of sedimentary rock. These are from Dr. Steve Austin. A megasequence is a groups, of sedimentary rock which span North America. There is absolutely nothing depositing sediment like this across the continent or world.

The present is the key to the past? Nothing is doing this right now.

But a global flood would have deposited layers of sedimentary rock like this.

2nd megasequence of sedimentary rock.

3rd megasequence of sedimentary rock.

4th megasequence of sedimentary rock.

5th megasequence of sedimentary rock.

Three fourths of the continents of the earth are covered with a mile of water deposited, sedimentary rock. Layers that are enormous. Spanning the continent.

There is literally nothing doing this on the planet. It's not happening.

So the present can't be the key to the past. Something very different happened in the past.

God judged the world through a global flood and we see evidence of it in the size of these layers.

Where did these sediments come from? A couple subpoints on this.

Sand transported cross country. This is from answersingenesis.com

The sand grains found in the Coconino Sandstone (yellowish) of Grand Canyon are pure quartz and were most likely transported from a source as far as northern Utah or Wyoming.

In southern Utah, the Navajo Sandstone (blueish) is made of distinctive sand grains that were most likely transported from the Appalachians of Pennsylvania and New York.

There is nothing moving sand from Wyoming or the Appalachians to deposit layers of sand hundreds of feet thick in Utah and Arizona right now.

Tells us something catastrophic was happening in the past. Like a global flood.

Another evidence for a global flood in the geological column is cross bedding.

Flowing water or wind can create cross bedding in sand. In this diagram, the current is flowing left to right. Some of the particles stop flowing. And their velocity goes to zero and they form these layers. Basically, it is sand dunes formed under water or on dry ground. You can tell the direction of the flow based on the direction of the cross bedding.

Here is an example of cross bedding in the world. I think this is Zion National Park, but definitely Utah or Arizona. You see the layers are sloped. We know that the flow was moving from left to right.

Using the cross bedding, we can plot direction of water flow around the planet. You would expect it to flow a variety of directions in the old earth model.

Yet the evidence is overwhelming that the water was flowing in one direction. More than half a million measurements have been collected from 15,615 localities recording water current direction indicators throughout the geologic record of North America.

Based on these measurements, water moved sediments right across the continent, from the east and northeast to the west and southwest.

How could water be flowing right across the North American continent consistently for hundreds of millions of years? Impossible!

But in a global flood you would totally expect this?

You need to know the old earth; evolutionary community thinks the column is all pretty much water deposited.

This is from Arizona Geology Survey, Visualizing Grand Canyon Stratigraphy, geologic column or stack of pancakes. "They" say this entire sequence of rock is all water deposited except for the Coconino Sandstone. They say "You young earth creationist are totally wrong. Yes, this whole thing is water deposited except for this. Dry desert. "

If you want to nerd out, I will include two links in my notes. It's all water deposited. There is actual excellent scientific evidence to support this. There are many lines of evidence. But the angle of repose of the sand is significant. So creation geologists have gone around measure the angle of the cross bedding and determined the angle is in line with an underwater deposit.

https://answersingenesis.org/geology/grand-canyon/coconino-sandstone-most-powerful-argument-against-flood/

https://creation.com/startling-evidence-for-noahs-flood

It is all water deposited. Cross bedding is powerful evidence for a global flow. God's water judgment of the planet meant that massive sheets of water were flowing across the earth laying down cross beds in one main direction.

Another piece of evidence for a global flood in the geological column is large boulders and cobbles found in the sedimentary rock layers. Why does this matter? It speaks of the high flow rate to move rocks this big.

Photo on the left. This is called the Tapeats Sandstone. It is sedimentary rock layer that has boulders and rocks in it of massive size. Which tells us a catastrophic flood was working to move rock pieces this big. That is a man in a red shirt by a boulder the size of van.

You should know the Tapeats sandstone is found as far away as Israel. Different local name, same layer.

The photo on the right is cobble and boulder size pieces at a different location in the Grand Canyon. Testifies to the destructive erosion of the flood and its catastrophically rapid deposition. During God's yearlong catastrophic judgment of the earth.

Our final piece of Evidence for a Global Flood in the geological column: E. Soft sediment deformation. What is sedimentary rock? It's essentially concrete. It is sand, gravel, clays, silts, cemented together in water. And what happens when you bend concrete? It breaks. Concrete isn't designed to be bent. It snaps. Here are some photos of a material testing lab bending concrete.

So what do you think is happening here? This is Carbon Canyon fold in the Grand Canyon. I hiked up to this fold with Dr. Snelling in 2017 as part of our Grand Canyon rafting trip. Close up on the right. One layer is highlighted red, so you see it. On the left, the layers are horizontal. And then they go vertical. It is because there is a large fault in the ground here. And this part of the ground lifted up 1,000 feet. And the interesting thing is the layers are NOT fractured and broken like concrete.

So young earth creationists said the layers were soft and pliable and that is why they didn't fracture. They had just been deposited. Which means the uplift happened fairly quickly after deposition? It would be sedimentary rock.

The old earth evolutionist said these rocks were heated in the "pressure cooker" so to speak. They were heated up and then bent. That is why they didn't break. It would be metamorphic rock.

Anyway, Dr. Snelling wanted to go get samples. To see under a microscope if it was sedimentary or metamorphic rock. And the National Park Service refused to let him do his research. There was a lawsuit. Snelling won. He went in here a few years ago. And got his samples. Checked them under a microscope.

Guess what?

It is a sedimentary rock. If we understand this, it's mind-blowing! It's a ground breaking study.

I will include both the general press release and the technical paper in my notes if you want to nerd out on this.

https://answersingenesis.org/about/press/2021/06/23/creation-research-grand-canyon-published/

https://answersresearchjournal.org/petrology-tapeats-sandstone-tonto-group/

The rocks were soft and bendable when they were deformed. It is a huge testimony to a recent global flood and catastrophic processes. But this is so significant. These are pictures of God judging the world through a yearlong flood.

CONCLUSION

So those are five evidences for a global flood in the geological column. As you drive around Utah. Keep your eyes opened for these things. They scream global flood! You can see these features as you drive around our state.

I want to end with this. Jesus spoke about Noah's flood, did you know that, and connected it to his return and judgment. As Christians, we believe that Jesus is God man. And Jesus believed Noah's flood happened.

This is important because someone might say, I don't know about all of this Old Testament judgment and flood stuff. I just like the words of Jesus.

Here is what Thomas Huxley, English biologist, agnostic, and Darwin's bulldog said. I confess I soon lose my way when I try to follow those who walk delicately among 'types' and allegories. A certain passion for clearness forces me to ask, bluntly, whether the writer means to say that Jesus did not believe the stories in question, or that he did? When Jesus spoke, as of a matter of fact, that "the Flood came and destroyed them all," did he believe that the Deluge really took, place, or not?" - Thomas Huxley

Good point Huxley. Well, let's read Jesus' words. What did he mean?

Luke 17:26 Just as it was in the days of Noah, so will it be in the days of the Son of Man. 27 They were eating and drinking and marrying and being given in marriage, until the day when Noah entered the ark, and the flood came and destroyed them all. … 30 so will it be on the day when the Son of Man is revealed.

JUDGMENT PHOTO. The stack of rocks. The geological column we see everywhere is a testimony to God's past judgment of the earth. And like Jesus said in Luke 17, like God judged the world during the flood, he will judge the world again. So we must repent and be ready to meet him.

Let's get in our groups and discuss till 800. Thank you!

Discussion Questions:
What did you learn tonight? What stood out to you?
Have you considered the theological implications of the geological column?
Which evidence for the global flood did you find the most compelling? Why?
In what ways do you see our society to be "hitting the snooze" or "drugging yourself with distractions" to avoid the reality of Jesus's return and the final judgment? What about for yourself? What does being awake and sober look like in hopeful expectation of Jesus's return?
Have a few people pray.

PRAY

See you in 2 weeks.