

## Weathering Climate Change | with Dr. Hugh Ross

(November 21, 2023)

**DAN:**

Climate change. Welcome to this episode of CrossExamined. We've got a guest with us today, Dr. Hugh Ross from Reasons. You can go to [Reasons.org](https://Reasons.org) and look at their website. They have tons of great information for any questions you might have, everything from the cosmos to current microbiology. Correct me if I'm wrong, but I believe they sport about 200 scholars now.

**HUGH:**

There are over 200 doctoral level scholars that help contribute to our testable creation model.

**DAN:**

That's fantastic. So, this climate change topic can be so polarizing. What we're covering today is actually a book you've come out with, 'Weathering Climate Change.' I've read it and I've got to tell you; it is that right bookend. For those of you who know Dr. Ross, having excelled in cosmology, arguments for the existence of God, clear from Big Bang to what atheists term as probably the best rationale for the existence of God, which would be fine-tuning, clear to the right bookend, which is now in my view, 'Weathering Climate Change.'

It actually brings from the old, the extremely old, and the origin of things, to how it all ends, but not yet. So, I'd like to open the conversation. Before we get going, Dr. Ross, every time we get together there is a question from the community, both CrossExamined community members and others outside the community. Why did God need billions of years? Why do you think He took billions of years to make the earth just so? I mean, he could have done it in 10, 20, or 30,000 years, couldn't He? What's your opinion on that?

**HUGH:**

Well, the Bible tells us in multiple places that God began His works of redemption before He created anything at all, which implies that everything that God has created, is to make possible the redemption of billions of human beings in a relatively short period of time. Meaning, the universe might be billions of years old, but the redemptive work of humanity happens in just thousands of years. And the reason why that's possible is that God designed the universe with electromagnetism, gravity, a strong and weak nuclear force, and thermodynamics. And those laws of physics, I describe this in my book, 'Why the Universe is the Way It Is.'

Those laws of physics are optimally designed not only to provide a home for us human beings, to enable our high technology civilization, but to make possible under the hand of God, the eradication and elimination of all evil and suffering. God's ultimate goal is to create a universe where He has these billions of human beings, where they can be redeemed from their sin and evil, while He exponentially enhances the capacity of beings who choose to spend eternity with Him to express and experience love.



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But for all that to be possible, you have to have thermodynamics, gravity, electromagnetism, the strong and weak nuclear force. And it's because of those laws of physics, and those multiple purposes that God has for creating universe, that the universe has to be precisely, you know, the 13.8 billion years. He could do it faster. He could do it slower. But if He did so, He wouldn't be able to accomplish as efficiently as He does, the more than dozen different purposes for why He created the universe. It's not just our benefit.

He created the universe to be a teaching tool to the angels, to prepare the angels for their future career, and as humans for a future career. So, God had multiple reasons for why He made the universe the way He did. And what the Bible tells us is that the moment that the full number of humans that God has redeemed have been redeemed, there will no longer be any thermodynamics, gravity, or electromagnetism. They'll all be gone. It says that explicitly in Revelation 21, the new creation.

In the new creation, there won't be any thermodynamics electromagnetism, or gravity. Why? Because that's a realm where evil is no longer a possibility. So, the unique thing of Christianity, it's a two creation model. He creates a very good universe to be a tool for the eradication of evil and suffering, which is a segue to the ultimate creation, the new creation, where evil and suffering will never exist again, but in a way that doesn't damage our free will capability to experience and express love. So yes, God could have done it a lot faster. But He had multiple reasons for creating the universe the way He did.

**DAN:**

Wow, thanks. Did you practice that? Yea, you must practice that. Do you get that question a lot?

**HUGH:**

I get that question a lot. I especially get it from atheists and skeptics. Couldn't God have done it differently? Yes, He could have, but He had more than one reason for making the universe the way He did.

**DAN:**

And I would argue, that's probably the most satisfying response I've heard to that question. And I posed it in other places as well. It stems almost from the fingerprint of God. God lets us see in the universe, things even in our position, in our galaxy, being just outside the disk. Being able to see the rest of space where if we were just a little off either way, we wouldn't even be able to detect [unintelligible].

**HUGH:**

You know, in the Gospel of John, Jesus gives us a one sentence summary of my long answer to your question. John 16:33, "In this world you will have tribulation. But take heart. I have overcome the world." As a physicist, sometimes I paraphrase that. In this world, you'll have thermodynamics. And because of thermodynamics, there will be tribulation. It's inevitable. It's going to happen. Our bodies decay as we get older. But the moment that God has completed

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His redemptive work, there will no longer be any tribulation. There will no longer be any thermodynamics because evil will have been eradicated.

**DAN:**

Thank you for clarifying all of that. It just dawned on me, the first book of yours I read over 40 years ago in high school, 'Fingerprint of God.' In fact, your book 'Creator and the Cosmos,' I was just speaking with one of one of the gentlemen that I used to fly military aviation with. His name was Mike. And I was talking to him probably two weeks ago when I was in Tucson. And I mentioned 'Weathering Climate Change' and told him, you absolutely have to read this. And he said, Hugh Ross? And I go, yeah. He goes, you know, that's how I became a believer. I read 'Creator and the Cosmos.' That led me to faith.

**HUGH:**

Wow.

**DAN:**

So, I hope you're encouraged with that?

**HUGH:**

Definitely.

**DAN:**

It definitely shows the Spirit can work and does work in the lives of people through those that are faithful to Him. So, on 'Weathering Climate Change,' (because the issue is so polarizing) how much of climate change do you think is human caused? How much was going to happen anyway? And is this Green New Deal or any of the things that you see politically being foisted upon the rest of us, how much of that is true? And how much is going to work or not work?

**HUGH:**

Well, I do run into a lot of climate change deniers that say there is no global warming going on. And yet, if you cite places like Eastern Europe and Eastern China, those places are actually getting colder, not warmer. But the global mean average, we see the planet indeed is getting warmer. That's been going on since 1950. And I think the biggest part of the debate, is whether that's human caused, or is it natural? Well, I was explaining in 'Weathering Climate Change.' We're now in a season of the history of the earth, where the natural cycles are cooling the planet. Which means, the only option to explain the warming is human activity.

Everything natural is working to cool it and it's actually working to cool it at a fairly rapid rate. But it's because of the exponential explosion of human technology, that in the last 70 years, that technology has actually outstripped the natural cooling by quite a considerable degree. But I think one reason why I hear a strong pushback on that is that there's so many governments of the world, political leaders who are using that as an excuse to take away freedoms from people, and exercise powers over people, to get people doing what's counter to their best interests. And

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so, people are saying, wait a minute. And so, it's that power grab that I think is really polarizing the debate. This is why I try to explain in the book, we can get rid of the power grab. And if we get rid of the power grab, I think people can respond to this situation in a much more rational way.

**DAN:**

And just for clarification for the listeners and viewers, I believe you said for the last 9,500 years, we've been in the most stable climate epic since the creation of the world, 2.58 million years of a cyclical glaciation and interglacial periods that are fairly regular. And yet, the last 9,500 years, for whatever reason, and I think we can imagine what reason, has been within, I believe you said point .06?

**HUGH:**

Well, we started off this discussion where he said, you know, I've written a lot about fine-tuning to make possible our existence. I've actually written seven full-length books on the fine-tuning argument for God. And I look at this book 'Weathering Climate Change' as one of the seven. The book is predominantly talking about how miraculous it is that we have this extreme climate stability from 9,500 years ago, up until 1950. And just the remarkable designs that you need to make that possible.

You mentioned the ice age cycle. We need an ice age cycle to have billions of people upon the face of the earth. The only way we can grow enough food is to be living in an ice age cycle, for multiple reasons. It's the melting of ice from the last ice age that gives us the water on our great agricultural plains to grow the food that we need. And the ice age cycle actually re-fertilizes those plains every 100,000 years. You need to have well-fertilized agricultural plains that are well watered to produce the food to sustain billions of human beings at a high technology level.

The problem is that an ice age cycle generates extreme climate instability, and how extreme? We're talking about the global mean temperature jumping up and down by 10 degrees centigrade, or 18 degrees Fahrenheit, on timescales of just a few centuries, which would utterly make it impossible for human beings to launch civilization beyond the stone age level. I mean, you just simply can't produce the food that you need to set free enough people like ourselves to do engineering, and science, and advanced technology. Everybody has to be focused on coming up with the food that they need.

I mean, before the Neolithic Revolution, 11,000 years ago, 99% of the human population was focused on coming up with the food that they needed. Today, it's 1%. One percent of the US population produces the food for the other 99%. What does that mean? Ninety-nine percent of us get to do science, engineering, art, music, teaching, you know, computer programming. That's what's been launching our high-tech civilization, the fact that we can produce such an abundance of food with so few human resources. But for that to be possible, you need extreme climate stability. And this is what I talked about today.

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And it's in my book, how since 9,500 years ago until 1950, a global mean temperature was stable to within plus or minus .6 degrees centigrade. And the newest research says if you focus on 900 AD to 1950 AD, it was stable to within plus or minus point .06 degrees centigrade. And it's thanks to that extreme stability, that we could actually have such an exponential growth and technology since the year 900 AD. Because notice, if you go before 900 AD, technology is advancing, but at a very slow pace. Come 900, it suddenly, exponentially jumps up.

**DAN:**

And how about the last 70 years from 1950 to current time? How much has the temperature gone up?

**HUGH:**

Well, stable through them plus or minus .06 degrees. Since 1950, it's jumped up by 1.1 degrees centigrade. There used to be debate about that. What's removed the debate is they now have temperature proxies that are taking over the oceans. That eliminates the elevation effect. Because if you're in Denver, you're going to get temperature measurements that are going to vary to a much greater degree than if you're at sea level. And so, taking out the elevation effect gives you really reliable measurements of the past global mean temperature, especially if you've got these proxies in all the oceans of the world, which we now do. And that's what showed that we really had this extreme climate stability. But since 1950, it's jumped up by that much.

**DAN:**

Great, you know, it strikes me. And you've probably thought of this. I have not until I'm thinking of it right now. This interglacial period of heating and cooling, with the majority of it being cooling, is there an argument for or against evolution of complex species, given that so much of the Earth is covered with ice during the glacial periods? Would that be an argument for or against? Or is that something that's even been thought?

**HUGH:**

Well, when people talk about the debate over the evolution of life, they're usually looking at a timescale of 3.8 billion years. I mean, even the most aggressive atheist naturalist will claim you're not going to get much happening in a few 10's of thousands of years. We need 10's of millions, hundreds of millions of years. And the ice age cycle has been in place just for the past 2.58 million years.

And I think what is significant, though, is that since the beginning of humanity on the face of the earth, the number of mammal species has declined for little more than 8,000 to only 4,000. And there's been not one new mammal species show up in that time. So, we're seeing this huge extinction rate with nothing to replace it. But there's a biblical reason that explains that. For six days, God creates. On the seventh day, He stops creating, and we're in that seventh day.

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The sixth day ended with God creating Adam and Eve. Since that time, the Bible tells us that God has ceased from His work of creating. So, all we see is a natural process since the beginning of humanity. And with only natural process going on, half the mammal species have gone extinct. Not a single new one has come in to replace them. So, how do you explain where all these mammals came from? Those are the six days that God created.

**DAN:**

Fantastic. And I remember from an earlier talk, one of the things to decrease greenhouse gases, I think the most significant, seem to be the ability to stop coal burning, at least the way it's being done, certainly in China and India. Now, coal gasification is more of a closed loop system, which would prevent a lot of the greenhouse gas, and soot, and mercury, and sulfur from entering the atmosphere. But natural gas right now could be almost a 50%. I think you said a 42% reduction in greenhouse gases if we went to natural gas. As far as burning for our energy.

**HUGH:**

Well, the difference between coal and natural gas, is coal, you burn it and you get carbon dioxide, which undoubtedly is a greenhouse gas. When you burn methane, which is natural gas, you get carbon dioxide, and you get water vapor. Water vapor is also a greenhouse gas. But if you put more of it in the atmosphere, it typically falls as rain and snow. So, it's hard to get a buildup of water vapor in the atmosphere. It's the buildup of carbon dioxide that's the real problem.

So, if we were to stop burning coal for generating electricity, and heat, and air-conditioning, and transportation, and replace that with natural gas, you'd get an immediate drop in greenhouse gas emissions of a little more than 40%. It's the fastest and cheapest way to drop the greenhouse gas emissions. Just simply stop the burning of coal. And by the way, I think coal is a great resource for making plastics.

Because it's not just, you know, the carbon in the coal. You've got nitrogen, you've got sulfur. You've got lots of other elements in there, which is valuable for making the variety of plastics that we want. Natural gas, not very good for making plastics, but it's a great fossil fuel. And it's cheap. It's a lot cheaper than coal.

**DAN:**

And that would be an interim term. While I believe, we discussed instead of uranium chain, going thorium chain and its daughter isotopes as far as energy generation would have multiple benefits. It could cover at least the energy needs of the US, even what we have here for 1000 years.

**HUGH:**

Well, that's right, because I think what's stopping progress on trying to mitigate global warming is people say we've got to stop burning fossil fuels and we can't use nuclear power generation,

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because that puts all kinds of radioactive waste into the environment. It's dangerous. You can get meltdowns. People can make nuclear weapons. Well, there are good and bad fossil fuels. As we already mentioned, natural gas, emits almost less than half of the greenhouse gases of coal. It emits no black carbon soot, emits no sulfur aerosols. And there's now papers being published saying that northern Canada is warming five times faster than the rest of the world. And carbon dioxide is a factor, but a bigger factor is black carbon soot from coal.

And people say, well, Canada doesn't burn much coal. But India and China does. They burn a lot of coal. And that black carbon soot from India and China is carried by winds and dumped on Canada. A lot of it's dumped on Siberia as well. And Siberia is also warming much faster than the rest of the world. Well, if we got rid of that black carbon soot, that would be a big factor that would cool down Siberia and Canada. And it would actually maintain the polar ice cap. And keep in mind, ice in the Arctic reflects sunlight with 60% efficiency. Open ocean Arctic water reflects it with only 6% efficiency.

So, if you want to keep the planet a little cooler, make sure there's lots of ice over the Arctic. Getting rid of that black carbon foot would be a big factor, helping that. And talking about thorium, I would agree that uranium nuclear fission reactors are a problem. You get this radioactive waste. It's dangerous to touch for 50,000 years. That's a long time. And yes. You've got the problem that you can convert any nuclear power reactor, uranium reactor, to make nuclear bombs. And you've got the risk of an accident where you get a meltdown.

If we replace the uranium with thorium, thorium fission nuclear reactors, number one, you get 300 times as much energy for a ton of thorium than you do for a ton of uranium. So, you get 300 times as much energy. There's three times as much thorium in the crust of the earth as there is uranium. It's easy to mine, it's cheap to mine, it's safe to mine. The miners don't have to wear protective clothing. And same thing with the thorium power plants.

The employees do not have to wear protective gear. It's impossible to have a meltdown in a thorium fission reactor. And, yes, you can make nuclear weapons with a thorium nuclear power plant. But it kills the people who make the weapons. And so, you're not going to be able have any weaponry you can use because it's going to kill everybody that works with it. And so, the bottom line is, you could give a thorium nuclear reactor to North Korea and not worry about them turning that into nuclear weapons. It won't be done.

**DAN:**

There are several countries around the world that are already instituting or studying how to create those thorium reactors for the use.

**HUGH:**

Well, the US actually had two thorium nuclear reactors in the 1960's. They were small plants, and they were abandoned because you couldn't make nuclear weapons with them. Today, the fact that you can't use them to make nuclear weapons is an advantage, not a disadvantage.

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And so, the problem is, how do we scale up the production of electricity from thorium nuclear reactors? Because all we've done so far is to do it on a small scale. So, I do agree there's an engineering challenge. Would we be better off making really big thorium nuclear power plants? Or should we make thousands of small wins? Where do we get the most bang for the buck? But the fact that you get 300 times as much energy out of a ton of thorium than you do for a ton of uranium, and the fact that the thorium is going to be an order of magnitude cheaper than uranium, tells me we should be able to get electricity for way less than we pay from power plants that get their electricity from hydroelectric.

That's significant because hydroelectric power generation is the cheapest source of power on the planet today. What if we could provide the consumer with electricity that would be half the price of what people pay for hydroelectric power. That would take away all the motivation to burn natural gas. So, we could use natural gas as a stopgap. You get an immediate drop in greenhouse gases. That would buy us about a decade of time to scale up these thorium nuclear reactors. Now we don't need any fossil fuels at all. And the entire process is feeding the economy. Rather than bleeding the economy, you're actually enhancing the economy, which means the taxpayer is going to love it. The governments don't have to get involved.

I think what's causing a lot of this controversy is people worried that there'll be powerful individuals in government, who use this climate crisis as a means by which they can begin to control the behavior of citizens of the country. Basically say, you can't drive an automobile anymore. It's got to be electric. And you know, I live in California and saying, well, yeah. Our governor wants to eliminate all fossil fuel burning cars. But how do we get the electricity? We get the electricity from burning natural gas, and that's at 25% efficiency. I've got a gasoline powered car. That's more than 40% efficient.

**DAN:**

I can just see Elon Musk's new thorium Tesla. I think you'd only get about 6,000 miles to the pound or something of that nature.

**HUGH:**

Well, that's not how it would work. You'd basically use a thorium power plant to generate the electricity. The electricity will feed your Tesla car. But now you're getting the electricity without having to put any greenhouse gases in the atmosphere. That makes sense. And especially if you can do it for a lot less money than you pay for gasoline at the pump, even though there's zero taxes on the gasoline. Now the consumer says, hey, I can drive my car 400 miles a week, and I'm paying \$0.45.

**DAN:**

As a student previously, looking at the power densities of radioisotopes for potential electrical generation, we came across an invention that had...it was processed radioisotope into about a grain of sand, and then it was covered with a luminescent, photoluminescent material like a silicone. So, it was almost like a golf ball and then the windings. And that coating, if you will, was

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doped to where it would actually react the same as a solar panel, and then one more silicon layer on the outside. So, it was like a core, windings, and the cover of a golf ball. And then it became a positive and negative sort of thing putting them together to create what we found was a calculated, anyways, was a mug-sized amount or volume of that at the same surface area as 13,000 square meters of solar power. And so, one might be able to do distributed power and thus eliminate this threat of taking out a national grid, is to do distributed grids. Do you think thorium doing distributed grids could also be a national security assistor?

**HUGH:**

Well, it could be in a sense, because the problem with wind and solar panel generation, it depends on the wind, and it depends on the sun. It's intermittent, so you've got to find some way to store the electricity to generate and distribute it. If you're talking thorium fission nuclear power plants, you'd generate the energy when you need it. And so, it's going to be much more efficient. And it's going to feed the economy a lot better because you basically just turn the plant on when you need the electricity. You turn it off when you don't. So, that's the most cost-effective way to generate the electricity. It also means we don't have to carpet America with these solar panels.

I was in Hawaii a few months ago. And what I noticed is they took out this very productive farm and covered it with solar panels. Well, you know, wouldn't it be better if we didn't have to take out farmland production to generate electricity? That's the advantage of thorium. It doesn't need a lot of land. And so, you can keep your farm production up. And the thing with wind is, those windmills are turning. It kills a lot of birds. And what a lot of people don't appreciate is, it takes a lot of fossil fuels to maintain those windmills. And so, it's not exactly a carbon neutral solution to power generation. The advantage of thorium, you generate no greenhouse gas emissions at all. It's a way to restore the climate. It's a way to stop the planet from warming.

And I tell people, this is a crisis we need to pay attention to, because people say, well, a warmer climate means I could live in Alaska where the scenery is great, and it'll be warm. But the problem is, global warming always leads to global cooling. You know, what always turns around an interglacial is global warming. And the reason why is that if you melt the winter polar ice cap, that means now that ice is not reflecting sunlight with 60% efficiency, open ocean water, only 6%. So, you produce a lot more evaporation of the water in the atmosphere. And because in the wintertime, it's cold, that atmospheric rich, water vapor now falls in Canada and Siberia as snow. And you see that in the ice age cycle. So, every time the temperature goes up, you wind up bringing on an ice age.

**DAN:**

So, I got this impression from the book. In summary, global warming is occurring. Yes, humans have contributed to this global warming significantly. But through various means, which we also are able to institute, we could actually reduce those greenhouse gases and prolong the area of stability as long as we can. But regardless, I believe in a book called 'The Big Chill,' we will enter another glacial period. And when do you think that's going to occur, and what will it look like?

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**HUGH:**

Well, we humans are responsible for warming the planet. We can also take steps to cool it back down. And so, we can delay the onset of the next ice age. But we can't delay it forever. The natural cycles are working to cool the planet. And eventually, it will bring on an ice age. And by the way, if you say, could we technologically work it so that we permanently delay the ice age? That's not to our advantage.

Once we run out of water melting from the ice left over from the last ice age, now we've got a water crisis. And moreover, we're draining the nutrients out of the agricultural plains. It's the ice age that fertilizes those plains. So, the fact that we have the cycle that regularly fertilizes it...but I think we could easily buy ourselves another 1500 years, which would be good to do. And as a Christian, I'm saying, I don't think we need more than 1500 years for God to complete His work of redemption.

**DAN:**

I hope not. I'm thinking 1500 seconds, minutes. [Laughter]

**HUGH:**

That might work too. Yeah.

**DAN:**

To close out the session, and I'm so glad you joined us. What would you like to say to someone thinking about buying the 'Weathering Climate Change', thinking about really involving themselves in understanding the issue? If you could sum it up, what would you offer a viewer or a listener?

**HUGH:**

Well, we've been talking about just two win win solutions: natural gas and thorium nuclear reactors. The book has about 40 different ways that we can restore climate stability, while we boost the world economy rather than cripple the world economy, especially for the benefit of poorest people in the world and at the same time, enhance the world's ecosystems. So, we'd be benefiting the wildlife on planet Earth. There really are win win solutions out there. We just simply have to implement them. We don't need to get the governments involved. If you give people a strong economic incentive, you don't need to pass a law. They'll do it right away.

I mean, you're a businessman. If I tell an investor, here's a way you can get a 15% return on your investment per year, how long do you think he's going to wait to snap up that opportunity? He's going to do it right away. And so, we just simply need to provide people with the opportunities. And again, from a Christian perspective, I know they're guaranteed because God told Adam and Eve in the Garden of Eden that you're in charge of the planet. You and your offspring are responsible to manage the planet's resources for your benefit, and the benefit of all other life. That implies that we're not between a rock and a hard place.

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I think what's causing all this angst is we have to choose between what's for our benefit, and what's for the benefit of all life on planet Earth. The Bible is basically telling us that we've got the resources to do what's good for us economically in terms of our health, and also what's good for the rest of life on planet Earth. We just need to look for those solutions. And that's primarily what I put in my book. I'm sure there's way more than 40 solutions we can pursue, but 40 is enough to get the ball rolling.

**DAN:**

Yeah. Well, thanks for joining us. As one final plug, Dr. Ross has another book coming out. I was able to get a pre-issued copy called 'Rescuing Inerrancy,' and I see that tied with the rest of your books. You're the perfect person to have written this. And I'm not going to do a spoiler of it. I'll just say, watch for it to come out. It is fantastic. Thanks again for joining us.

**HUGH:**

My pleasure.

**DAN:**

And hope to see you soon again.

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