

REASON TOGETHER CHURCH

REASON TOGETHER STUDIES

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DOES CARBON-14 DATING MEASURE AGE OR ASSUME IT?

THE WORLD THAT THEN WAS
2 PETER 3:6



DR. THOMAS W. HAWKSLEY

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BRING YOUR QUESTIONS. OPEN YOUR BIBLE.
LET'S REASON TOGETHER THE WORD OF GOD.

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SERMON TRANSCRIPT

DOES CARBON-14 DATING MEASURE AGE OR ASSUME IT?

2 Peter 3:3-7

Dr. Thomas W. Hawksley

Reason Together Church

www.ReasonTogether.Church

Bring your questions. Open your Bible.
Let's Reason Together the Word of God.

Aloha.

Welcome to Reason Together Church.

Whether you have been with us from the beginning, whether this is your first time visiting or whether you are still trying to decide what you believe, I am genuinely glad that you are here.

At Reason Together Church, we do not believe questions are enemies of faith.

We believe honest questions can lead us into a deeper and more careful examination of the Word of God.

Our invitation is simple.

Bring your questions.

Open your Bible.

Let us Reason Together the Word of God.

If you are visiting, please understand that you are our honored guest.

You are not expected to give anything.

If you are a member of another church, we encourage you to support your home church.

For those who call Reason Together Church their church home, there is a giving box available in the back, but we will not pass a plate and we will not interrupt the study to ask you for money.

We want you to be able to listen, think and reason without wondering what will be expected from you next.

There is also a guest card available.

We ask only for your first name and an email address so we can let you know what we will be studying next.

After the service, please stay for coffee and conversation.

The coffee is free.

The refills are free.

And around here, we like to say that the refills on conversation are free as well.

Let us pray.

Heavenly Father, thank You for allowing us to gather around Your Word.

Thank You for the world You created and for minds capable of examining the works of Your hands.

Give us humility as we consider things none of us personally witnessed.

Protect us from fearing scientific measurements.

Protect us also from treating a human interpretation as though it carried the authority of Your Word.

Help us distinguish what has been measured, what has been calculated and what has been assumed.

Keep us honest when evidence challenges our preferred explanation.

Keep us faithful when confident voices challenge what You have revealed.

May Jesus Christ be honored in everything that is taught and everything that is received.

In Jesus' name we pray.

Amen.

Over the last two studies, we have asked whether science agrees with a young earth and whether science agrees with an old earth.

Those studies allowed us to examine evidence commonly presented by both sides.

Today we are going to look more closely at one of the clocks people most frequently mention.

The question on the cover is intentionally short.

Does Carbon-14 dating measure age or assume it?

Before we answer, imagine that someone hands you an old family photograph.

There is no date printed upon it.

There is nothing written on the back.

Everyone agrees that the photograph is real.

The people in it are real.

The clothing is visible.

The house is visible.

There may be an automobile parked beside the house.

But when someone asks, "When was this photograph taken?" the photograph does not speak its date aloud.

You begin gathering clues.

You identify the people.

You estimate their ages.

You examine the clothing.

You identify the automobile.

You ask when that house was built.

You compare what you see with other photographs.

Every clue may be real.

The date is still reconstructed from those clues.

If one person in the picture is misidentified, the date may change.

If the automobile was kept for twenty years, the date may change.

If the clothing was handed down from an older family member, the date may change.

The evidence is real, but the history attached to it requires interpretation.

That simple distinction will guide our entire conversation today.

The carbon is measured.

The age is calculated.

Our principal Biblical passage is Second Peter chapter three, beginning with verse three.

The Bible says:

"Knowing this first, that there shall come in the last days scoffers, walking after their own lusts, And saying, Where is the promise of his coming? for since the fathers fell asleep, all things continue as they were from the beginning of the creation.

For this they willingly are ignorant of, that by the word of God the heavens were of old, and the earth standing out of the water and in the water:

Whereby the world that then was, being overflowed with water, perished:

But the heavens and the earth, which are now, by the same word are kept in store, reserved unto fire against the day of judgment and perdition of ungodly men."

Peter is not writing a laboratory manual.

He does not mention carbon-14.

He does not give us an equation.

He does identify an assumption about history.

The scoffers say that all things continue as they were from the beginning of the creation.

Their argument about the future depends upon their reconstruction of the past.

They do not expect Christ to return because they assume the world has always continued without decisive divine intervention.

Peter points them toward two events their reconstruction has excluded.

God created by His Word.

God judged the former world by water.

Peter then uses a striking expression.

He calls it "the world that then was."

The world that then was is contrasted with "the heavens and the earth, which are now."

This does not mean the pre-Flood earth was another planet.

It does not prove every scientific model Christians have proposed about that world.

It does mean the Bible will not allow us to reconstruct the past as though creation and the Flood never happened.

The conditions then matter.

The events in between matter.

The measurements now matter.

If any one of those is misunderstood, the date assigned today may not represent the actual history of the sample.

Let us begin with what Carbon-14 dating actually does.

Carbon-14 does not ordinarily date the earth.

It does not ordinarily date ancient rock.

It is primarily used to date material that was once living.

That may include wood, charcoal, seeds, bone, plant fibers, shells and other biological remains.

When scientists calculate conventional ages of millions or billions of years for rocks, they usually use other isotope systems.

Those include uranium-lead, potassium-argon, argon-argon and several others.

Those methods have their own assumptions and their own complications.

They are not Carbon-14 dating.

That distinction matters because people sometimes say, "Carbon dating proves that the earth is billions of years old."

Carbon-14 cannot do that.

Its usable range is measured in tens of thousands of years, not billions.

But Carbon-14 remains important because it can test the age assigned to things that once lived.

Carbon occurs in different forms called isotopes.

Carbon-12 is stable.

Carbon-14 is radioactive.

Carbon-14 is produced when activity associated with cosmic rays interacts with nitrogen in the atmosphere.

It becomes part of carbon dioxide.

Plants take in carbon dioxide.

Animals obtain carbon by eating plants or by eating other animals.

While an organism is alive, it continually exchanges carbon with its environment.

When the organism dies, that ordinary exchange stops.

The Carbon-14 already in the organism begins to diminish through radioactive decay.

Carbon-14 has a half-life of approximately 5,730 years.

That means that after one half-life, approximately half of the original Carbon-14 remains.

After another half-life, approximately half of that half remains.

The decay can be measured.

The ratio in the sample can be measured.

But an important question appears immediately.

Half of what original amount?

If I tell you that I have half of the coffee that was originally in a cup, you still do not know how much coffee I have.

You need to know how much was in the cup when we began.

Half of sixteen ounces is eight ounces.

Half of eight ounces is four ounces.

The fraction may be identical while the quantity is different.

In the same way, the amount of Carbon-14 remaining becomes meaningful as a clock only when it is compared with an estimated starting condition.

The organism did not carry a label stating its original Carbon-14 ratio.

That original ratio must be reconstructed.

The scientific instrument can tell us what is present in the sample now.

It cannot travel backward in time and directly measure the atmosphere when that organism died.

That does not mean scientists simply guess.

They use calibration records, comparison samples, environmental corrections and mathematical models.

Those efforts are real and often sophisticated.

But the question remains.

Does the model correctly represent the conditions in which this particular organism lived and died?

We can place the problem into three simple questions.

How was the clock set?

How did the clock run?

Was the clock disturbed?

First, how was the clock set?

How much Carbon-14 did the organism possess when it died?

What was the ratio of Carbon-14 to ordinary carbon in its environment?

Was its carbon obtained directly from the atmosphere?

Did it come from the ocean?

Did it come from freshwater containing carbon dissolved from limestone?

Did it eat food from several different carbon reservoirs?

Second, how did the clock run?

Did Carbon-14 decay according to the expected behavior?

Was the accepted half-life applicable?

Some creationist models have proposed accelerated radioactive decay during extraordinary periods of earth history.

That proposal faces serious questions about the heat and radiation such acceleration would produce.

This sermon does not need accelerated decay in order to identify the primary assumptions behind Carbon-14 dating.

The stronger questions involve the clock's starting condition and the sample's later history.

Third, was the clock disturbed?

Did later carbon enter the sample?

Did original carbon leave it?

Did groundwater pass through it?

Was the sample exposed to limestone, soil acids, bacteria, preservatives or laboratory material?

Was it chemically altered during burial?

Those are not imaginary concerns.

Scientists clean samples and apply corrections precisely because contamination and environmental differences are real.

Here is the central statement I want us to remember.

Carbon-14 is measured in the present, but its age is calculated by reconstructing the conditions and events of the past.

Now let us give proper attention to those conditions.

The Bible does not describe the pre-Flood world as though it were merely the modern world without highways and electric lights.

Genesis describes waters above the firmament.

Genesis describes extraordinarily long human lifespans before the Flood.

Genesis describes the breaking up of the fountains of the great deep.

Genesis describes the windows of heaven opening.

Genesis describes a catastrophe that destroyed the terrestrial world of that time.

Second Peter calls it the world that then was.

We must be careful here.

The Bible tells us those facts.

It does not give us the pre-Flood atmospheric pressure.

It does not give us the concentration of Carbon-14.

It does not tell us the precise strength of the magnetic field.

It does not tell us how many tons of living vegetation covered the earth.

We must distinguish what Scripture reveals from the scientific models we construct around it.

But once Scripture reveals a materially different world and a global catastrophe, it is reasonable to ask whether those differences and events affected the carbon clock.

Consider the atmosphere.

Carbon-14 production is influenced by cosmic-ray activity.

Solar activity can affect it.

The earth's magnetic field can affect it.

The movement of carbon among the atmosphere, oceans and biosphere can affect its distribution.

Scientists already recognize that atmospheric Carbon-14 has not remained perfectly constant.

That is why modern Carbon-14 dating uses calibration curves.

We should not build our argument around the statement that scientists assume the atmospheric ratio has always been exactly the same.

They do not.

The better question is whether available calibration methods could recognize and correctly account for the magnitude and speed of changes associated with the Biblical past.

Suppose the pre-Flood magnetic field differed from the magnetic field today.

That could affect the amount of cosmic radiation reaching the atmosphere and therefore the production of Carbon-14.

The possibility is worth examining.

But possibility is not enough.

We must ask how different the field was, how much production would change and whether that change is large enough to account for the dates being questioned.

Now consider the biosphere.

What if the pre-Flood world contained far more vegetation and far more biologically stored carbon than the earth contains today?

Genesis does not provide the number, but the possibility is relevant.

Vast forests and enormous quantities of plant material later buried as coal would represent a tremendous reservoir of ordinary carbon.

Carbon-14 is extremely rare.

If the available Carbon-14 were distributed throughout a much greater quantity of ordinary carbon, the ratio within living organisms could be lower.

An organism that began with a lower Carbon-14 ratio would appear older if its age were calculated using a higher assumed starting ratio.

The laboratory could measure the present ratio correctly.

The mathematical calculation could be performed correctly.

The resulting historical age could still be wrong because the clock did not begin where the model placed it.

That is an important possibility.

It is not yet a complete demonstration.

We would need to estimate the amount of pre-Flood carbon, the rate of Carbon-14 production, its distribution and the changes caused by the Flood.

Good Biblical reasoning should never be afraid of that next question.

We should not say, "I found a possibility, therefore I have proven my conclusion."

We should say, "Here is a condition that could affect the result. Now let us determine whether the effect is large enough to matter."

What about the waters above the firmament?

Genesis chapter one, verses six and seven say:

"And God said, Let there be a firmament in the midst of the waters, and let it divide the waters from the waters.

And God made the firmament, and divided the waters which were under the firmament from the waters which were above the firmament: and it was so."

The waters above are Biblical.

A particular canopy model is an interpretation.

Scripture does not tell us whether those waters were liquid, vapor, ice or some condition we have not fully reconstructed.

It does not state their altitude, density, temperature or thickness.

It does not tell us how much cosmic radiation they blocked.

A canopy might affect atmospheric conditions.

It might influence Carbon-14 production.

But we cannot preach the details of one canopy model with the same authority as the words of Genesis.

The proper statement is simple.

The waters above are revealed in Scripture.

The scientific canopy models proposed to explain them must still be tested.

There is another starting-condition question.

Had the Carbon-14 system reached equilibrium?

Carbon-14 is continually produced.

It also continually decays.

It moves among the atmosphere, living organisms, soil and oceans.

A system that had operated for a very long time might approach a balance different from a carbon system that had begun more recently.

If God created the world within the Biblical chronology, the first generations lived in a carbon system with a beginning.

The atmosphere did not have an infinite past in which to establish its ratio.

How quickly would the system approach its later condition?

How did the pre-Flood biosphere affect that process?

How did the Flood interrupt it?

Those are legitimate questions because the date depends upon the original ratio.

Now consider the oceans.

The oceans contain an enormous amount of carbon.

Carbon in deep water does not necessarily have the same Carbon-14 ratio as carbon in the atmosphere.

Deep ocean water can remain separated from atmospheric exchange for a significant period.

An organism living in the ocean may therefore begin with a different apparent Carbon-14 age from a plant growing upon the land at the same time.

Scientists call this a reservoir effect.

Marine reservoir corrections are part of modern dating practice.

Freshwater can create similar problems when it contains carbon dissolved from ancient limestone.

A living shell or organism can incorporate carbon that already appears old.

This is extraordinarily important to our discussion.

It demonstrates that an organism's apparent Carbon-14 age can be influenced by the source of its carbon.

The reservoir effect does not prove Carbon-14 dating is useless.

It proves that environmental history matters.

Now place that recognized fact beside the Flood described in Genesis.

Genesis chapter seven, verse eleven says:

"In the six hundredth year of Noah's life, in the second month, the seventeenth day of the month, the same day were all the fountains of the great deep broken up, and the windows of heaven were opened."

This was not an ordinary rainy season.

The fountains of the great deep were broken up.

The windows of heaven were opened.

Water prevailed upon the earth.

Land-dwelling life perished.

Vegetation was torn up, transported and buried.

Sediment moved on an enormous scale.

Ocean water, surface water, groundwater, soil carbon, atmospheric carbon and biological carbon would have been involved in the catastrophe.

If deep and surface carbon reservoirs mixed differently, organisms could possess different starting ratios.

If vast quantities of vegetation were removed from the active carbon cycle and rapidly buried, the ratio in the remaining atmosphere could change.

If volcanic activity released carbon, the ratio could change.

If ocean circulation changed, reservoir corrections could change.

If the post-Flood world required time to reach a new balance, a calibration built upon gradual change might stretch a rapid transition into a longer apparent chronology.

Again, these are mechanisms to investigate.

We must not hide a lack of explanation behind the single sentence, "The Flood changed everything."

We must ask what it changed.

We must ask how it changed.

We must ask how much it changed.

And we must ask whether that change would make an organism appear younger or older.

Floodwater covering a dead organism would not automatically change Carbon-14's radioactive decay.

Water is important because of what it carries and what it does chemically.

Groundwater can introduce carbon.

Groundwater can remove carbon.

It can dissolve minerals and deposit new ones.

It can replace portions of bone, shell or wood.

It can carry carbon from limestone that contains little measurable Carbon-14.

It can carry modern biological carbon into cracks and pores.

Modern carbon contamination can make an old sample appear younger.

Carbon depleted in Carbon-14 can make a sample appear older.

Contamination can work in either direction.

That is why the word contamination cannot be used as a convenient escape by either side.

If an unexpected sample produces measurable Carbon-14, saying "contamination" is not a complete explanation.

Where did the contaminating carbon enter?

How much entered?

Can it account for the measurement?

If a creationist says the sample was altered by the Flood, that is also not a complete explanation.

What was altered?

By what mechanism?

Would the effect be large enough?

We should require both sides to explain the evidence rather than merely name a possibility.

Let us return to the laboratory.

Modern laboratories do not simply place a bone into a machine and accept whatever number appears.

Samples are examined and cleaned.

Researchers attempt to remove contaminants.

They may separate particular chemical components.

They measure isotope ratios with sensitive instruments.

They compare the result with standards and background measurements.

They report statistical uncertainty.

Then they calibrate the radiocarbon result.

Calibration is necessary because scientists know atmospheric Carbon-14 has varied.

For the more recent portions of the calibration record, tree rings are extremely important.

A tree adds growth rings that can sometimes be counted year by year.

The Carbon-14 in rings assigned to particular years can be measured.

Other materials used farther back include corals, cave deposits, lake sediments and marine records.

The current international calibration curve extends the conventional Carbon-14 chronology to approximately 55,000 calendar years before the present.

That is a much more sophisticated process than assuming the modern atmosphere has always remained unchanged.

We should acknowledge its strength.

We should also understand where questions remain.

The oldest living tree is not 55,000 years old.

Long tree-ring chronologies are extended by overlapping patterns from different pieces of wood.

Researchers compare narrow and wide rings produced by environmental conditions.

Those matches can be strong.

But we may still ask how each floating sequence was positioned.

Was Carbon-14 used to help locate it before it was used to calibrate Carbon-14?

How many independent matches are available?

Do difficult growing seasons ever produce more than one ring or no visible ring?

How are missing rings identified?

As the calibration moves beyond directly counted and historically anchored tree rings, other materials and other dating methods become increasingly important.

Corals and cave deposits may be assigned ages through uranium-based methods.

Marine sediments require reservoir corrections.

Each method can contribute valuable evidence.

Each method also brings its own model and assumptions.

That does not allow us to dismiss calibration as nothing but circular reasoning.

It does allow us to ask where the chronology is independently established and where one model-dependent method begins supporting another.

Proverbs chapter eighteen, verse seventeen says:

"He that is first in his own cause seemeth just; but his neighbour cometh and searcheth him."

The first explanation may sound complete until someone asks what it assumes.

The criticism may sound devastating until someone examines whether it can account for the numbers.

Reasoning together requires both examinations.

Now we come to one of the most controversial claims in this discussion.

Carbon-14 has reportedly been measured in materials conventionally assigned ages far beyond the range in which original Carbon-14 should remain detectable.

The list sometimes includes coal, fossil wood, dinosaur remains and even diamonds.

Why would that matter?

After enough Carbon-14 half-lives, the original amount should become exceedingly small.

If Carbon-14 is genuinely present within a sample and genuinely original to that sample, then an age of many millions of years would be difficult to reconcile with the measurement.

But we must not skip those two words.

Present and original.

An extremely sensitive instrument can detect very small amounts of carbon.

At those levels, laboratory background becomes important.

Carbon introduced during collection becomes important.

Carbon introduced during chemical preparation becomes important.

Groundwater and microbial activity become important.

Adhesives and preservatives become important.

The conventional response is often that the detected Carbon-14 is contamination or measurement background.

Sometimes that may be correct.

But contamination should be demonstrated rather than assumed merely because Carbon-14 was unexpected.

The creationist response is often that any Carbon-14 proves the sample is young.

That can also move too quickly.

The carbon must be shown to be original to the specimen.

The measurement should be above the laboratory background.

The treatment history should be known.

The result should be reproducible.

Preferably, several properly controlled samples should be tested by more than one qualified laboratory.

Detecting Carbon-14 is not automatically proof of a young sample.

Saying contamination is not automatically proof of an old sample.

Both explanations must account for the measurement.

What about dinosaurs?

Carbon-14 is not ordinarily used to date dinosaur fossils because conventional geology assigns them ages of many millions of years.

Any original Carbon-14 should be gone according to that chronology.

When a sample identified as dinosaur material produces a Carbon-14 result, several questions must be answered.

Was the specimen correctly identified?

Was the material being tested original biological carbon or later material that entered the fossil?

Was the sample collected and prepared under controlled conditions?

Was it treated with preservatives?

Did groundwater introduce younger carbon?

Was the measurement distinguishable from laboratory background?

Those questions do not make the result meaningless.

They tell us what evidence is necessary before the result can carry the conclusion people want to place upon it.

Carbon-14 in coal raises similar questions.

If coal came primarily from vegetation buried only thousands of years ago, why is its remaining Carbon-14 often so low?

That question challenges a young-earth explanation as well as an old-earth explanation.

A young-earth model may propose that pre-Flood organisms began with far less Carbon-14 because the atmosphere had not reached equilibrium, the biosphere was much larger or Carbon-14 production was lower.

That model must show whether the proposed conditions can account for the measured amount.

The old-earth model may identify the measurement as contamination or background.

That model must show whether the amount and source of contamination can account for the measurement.

This is how a serious study should proceed.

We do not protect our position by refusing to ask the difficult question.

We strengthen it by requiring an explanation that can survive the difficult question.

There is another difference we must understand.

Precision is not identical to historical certainty.

A laboratory may measure an isotope ratio with extraordinary precision.

The statistical margin around that measurement may be narrow.

That tells us something important about the quality of the present measurement.

It does not automatically tell us that every original condition is known.

Suppose a cashier counts the money in a register and reports the exact total to the penny.

The count may be perfect.

But if we ask how much money was earned during the day, the present total is not enough.

How much money was in the register when the day began?

Were refunds issued?

Was money removed for a bank deposit?

Was change added from another drawer?

The present count can be exact while the conclusion about the day's sales is wrong.

The problem is not the counting.

The problem is the unexamined history of the system.

In Carbon-14 dating, we should distinguish three levels.

First, the measurement.

The sample contains a particular Carbon-14 ratio.

Second, the calculation.

Under the selected model, that ratio produces a radiocarbon age.

Third, the historical interpretation.

That radiocarbon age represents the actual number of years since the organism died.

The first is observed in the present.

The second applies mathematics and calibration.

The third claims a history.

Every step may be carefully reasoned.

They are still not the same kind of statement.

So does Carbon-14 dating measure age or assume it?

It would be unfair to answer, "It merely assumes everything."

The method measures real physical properties.

Radioactive decay is real.

Carbon-14 is real.

Isotope ratios are real.

Laboratory safeguards are real.

Calibration can improve a date.

It would also be inaccurate to answer, "It directly measures age."

No instrument observes the death of an ancient organism.

The instrument measures what remains.

The age is calculated through a reconstruction of the past.

The responsible answer is this.

Carbon-14 dating measures the amount and ratio of carbon isotopes remaining in a sample.

It calculates an age using assumptions and evidence concerning the original carbon ratio, environmental conditions, calibration and the sample's subsequent history.

The carbon is measured.

The age is interpreted.

Some people will hear the word assumption and think we have proven the dating method worthless.

We have not.

Every attempt to reconstruct an unobserved past begins with assumptions.

The question is whether those assumptions are justified.

Old-earth researchers may assume that natural processes and calibration records can reliably reconstruct conditions far into the past.

Young-earth researchers begin with the historical testimony of Scripture and attempt to model the physical effects of creation and the Flood.

Both positions must connect their starting framework with the evidence.

A Biblical starting point does not excuse careless science.

A scientific title does not remove philosophical assumptions.

First Thessalonians chapter five, verse twenty-one says:

"Prove all things; hold fast that which is good."

Test the measurement.

Test the calibration.

Test the contamination claim.

Test the reservoir correction.

Test the proposed canopy effect.

Test the larger-biosphere model.

Test the Flood mechanism.

Test our own favorite argument.

If an argument cannot withstand examination, we should not place it in the pulpit merely because it supports the conclusion we prefer.

Psalm 111, verse two says:

"The works of the LORD are great, sought out of all them that have pleasure therein."

Studying the creation is not rebellion against the Creator.

God made the carbon.

God established the physical order.

God gave us minds capable of measuring and comparing.

Christians should not fear an honest laboratory result.

At the same time, the physical creation is not the only witness God has given us.

He has also spoken.

Job chapter thirty-eight, verse four records God's question to Job:

"Where wast thou when I laid the foundations of the earth? declare, if thou hast understanding."

That question reaches every one of us.

Where was the old-earth scientist when God laid the foundations of the earth?

He was not there.

Where was the young-earth scientist?

He was not there.

Where was the preacher?

I was not there.

Where were you?

You were not there.

We all examine evidence that exists in the present.

God possesses knowledge of the event itself.

His Word tells us that He created.

His Word tells us that Adam was real.

His Word gives us a meaningful history from Adam through Noah and from Noah toward Abraham.

His Word tells us that a former world perished in the Flood.

His Word tells us that conditions and events have not simply continued unchanged from the beginning.

That testimony belongs in our reconstruction of the past.

We should not use Scripture to avoid examining physical evidence.

We should use Scripture to keep our reconstruction from excluding events God says occurred.

The problem is not science against the Bible.

The problem arises when a human interpretation of nature is set against a human interpretation of Scripture and one side pretends no interpretation is involved.

Physical evidence and correctly understood Scripture ultimately come from the same God.

If they appear to conflict, we may have misunderstood the evidence.

We may have misunderstood the text.

We may have built an inadequate scientific model around a correct Biblical conclusion.

Humility allows us to examine all three possibilities without surrendering the truthfulness of God.

Let me give you three conclusions to carry from this study.

First, Carbon-14 dating is not worthless.

It measures real properties and can provide useful information.

Second, Carbon-14 dating does not directly measure age.

It measures a present isotope ratio and calculates an age.

Third, the reliability of that calculated age depends upon whether the model correctly accounts for the conditions then and the events in between.

Say those three phrases with me in your mind.

Conditions then.

Events in between.

Measurements now.

Conditions then matter.

The atmosphere matters.

The magnetic field matters.

The size and distribution of the biosphere matter.

The source of an organism's carbon matters.

The possibility that the system had not reached equilibrium matters.

Events in between matter.

The Flood matters.

The mixing of oceans and atmosphere matters.

Rapid burial matters.

Groundwater matters.

Contamination matters.

Measurements now matter.

Laboratory precision matters.

Cleaning procedures matter.

Background levels matter.

Calibration matters.

Reproducibility matters.

And above all, Biblical revelation matters.

Faith does not require us to fear measurement.

Reason does not require us to surrender Scripture.

We can respect the measurement and still examine the assumptions used to turn that measurement into a date.

We can admit that a creationist proposal needs more work without conceding that the conventional chronology has been proven beyond question.

We can admit that scientists have developed meaningful corrections without pretending those corrections reconstruct every condition of the Biblical past.

We can say, "I do not know yet," without saying, "God's Word must therefore be wrong."

There is one more reason Second Peter chapter three matters today.

Peter is not primarily concerned with the age of a sample.

He is concerned with the coming judgment of God.

The scoffers look at ordinary life and assume tomorrow will continue as yesterday did.

Peter reminds them that the former world was judged by water.

He warns that the present heavens and earth are reserved unto judgment.

Jesus made the same connection in Matthew chapter twenty-four.

He said:

"But as the days of Noe were, so shall also the coming of the Son of man be.

For as in the days that were before the flood they were eating and drinking, marrying and giving in marriage, until the day that Noe entered into the ark,

And knew not until the flood came, and took them all away; so shall also the coming of the Son of man be."

Eating was not their sin.

Drinking was not their sin.

Marriage was not their sin.

They continued ordinary life while disregarding the warning of God.

They assumed tomorrow would be another ordinary day.

Then judgment came.

You do not need to understand every scientific detail of the Flood to understand its spiritual warning.

God is holy.

Sin brings judgment.

God warned Noah.

God provided an ark.

Noah believed God and entered the refuge God provided.

Today our refuge is not a wooden vessel.

Our refuge is Jesus Christ.

The Bible says that all have sinned and come short of the glory of God.

That includes scientists.

That includes creationists.

That includes preachers.

That includes every person in this room.

Our greatest problem is not that we may have assigned the wrong date to a bone.

Our greatest problem is that sin has separated us from the holy God who created us.

But God did not leave us without hope.

Jesus Christ, the Son of God, came into this world.

He lived without sin.

He died upon the cross and bore the judgment our sins deserved.

He was buried.

On the third day, He rose again.

Salvation is not received by choosing the correct side in a debate about the age of the earth.

Salvation is received through repentance and faith in Jesus Christ.

Noah could not save himself by calculating the volume of Floodwater.

He entered the refuge God provided.

You cannot save yourself by becoming religious, moral or intellectually certain.

You must come to Christ.

If you recognize your sin and understand that you cannot save yourself, you can call upon Him today.

The prayer I am about to offer is not a magical collection of words.

Repeating after a pastor does not save anyone.

Jesus saves the person who genuinely repents and places his or her trust in Him.

If that is the desire of your heart, you may pray quietly with me.

Lord Jesus,

I know that I am a sinner.

I know that I cannot save myself.

I believe that You died for my sins.

I believe that You were buried and rose again.

I turn from trusting myself and place my faith in You.

Please forgive me, save me and make me Your own.

Thank You for the gift of eternal life.

In Jesus' name,

Amen.

If you prayed that prayer and meant it, please speak with me before you leave.

I would be honored to pray with you, answer your questions and help you understand what comes next.

For everyone here, this conversation should not end with the final word of the sermon.

During the coming week, read Genesis chapters six through nine and Second Peter chapter three.

Write down every condition and every event the passages actually identify.

Then distinguish those Biblical statements from the scientific models we have added in an attempt to explain them.

When you hear a Carbon-14 date, ask three questions.

What was measured?

What original condition was estimated?

What events were assumed to have affected or not affected the sample?

Do not ask those questions with arrogance.

Ask them because Proverbs tells us to examine the matter.

If you disagree with something I said today, please do not leave with the disagreement silently growing into frustration.

Let us open the Bible.

Let us examine the evidence.

Let us talk over coffee.

The coffee is free and the refills on conversation remain free.

If the question returns on Tuesday afternoon instead of Sunday morning, you do not have to wait until the next service.

Please contact me.

If this subject has made you feel that faith and science are pulling you in opposite directions, I would be honored to talk and pray with you.

This church exists for more than a weekly presentation.

We want to walk together, reason together and help one another grow in Christ.

Let us close in prayer.

Heavenly Father, thank You for Your Word.

Thank You for the physical creation that declares Your glory.

Thank You for every scientist, researcher and careful student who has helped us understand the world You made.

Give us respect for honest measurement and courage to examine human conclusions.

Keep us from exaggerating evidence simply because it appears to support our position.

Keep us from surrendering revealed truth simply because a scientific claim sounds certain.

Give us wisdom to distinguish observation, calculation and interpretation.

Help us account for the conditions You established at creation, the world that then was and the Flood You sent in judgment.

Give creation researchers the humility and skill to test their models quantitatively.

Give conventional researchers the willingness to examine assumptions that have become familiar.

Where we do not yet know, teach us to say so honestly.

Where Your Word has spoken, teach us to stand faithfully.

Most of all, help us remember that the ark points us toward the refuge found in Jesus Christ.

Bring conviction and salvation to anyone who has heard the gospel today.

Watch over every person as we leave this place.

Carry this conversation into our homes and into the coming week.

In Jesus' name we pray.

Amen.

Thank you for reasoning together with us today.

Please remain for coffee, questions and conversation.

Aloha Nui Loa.

REASON TOGETHER CHURCH

REASON TOGETHER STUDIES

COMMENTARY

DOES CARBON-14 DATING MEASURE AGE OR ASSUME IT?

A Biblical, Scientific and Historical Commentary

2 Peter 3:3-7; Genesis 1:6-8; Genesis 6-9 (KJV)

Dr. Thomas W. Hawksley

Bring your questions. Open your Bible.

Let's Reason Together the Word of God.

Commentary Introduction

The question on the cover is intentionally sharper than a technical manual would use: Does Carbon-14 dating measure age or assume it? The responsible answer requires a distinction. A laboratory measures a present physical property. It measures the amount or ratio of Carbon-14 remaining in a sample. The age is then calculated by relating that measurement to radioactive decay, an estimated starting condition, the sample's carbon source, its later history and a calibration framework.

That does not reduce radiocarbon dating to a guess. The isotope is real. The measurement is real. The decay law is real. Laboratory pretreatment, standards, blanks and statistical uncertainty are real. Yet none of those facts turns an instrument into an eyewitness of the past. The instrument tells us what is present now. A model tells us what the present measurement means about an organism that died long ago.

This distinction is especially important for a Biblical study because Scripture describes a world before the Flood, a global judgment by water and a world after that judgment. Conditions then may not have been identical to conditions now. Events in between may have changed carbon reservoirs, burial environments and the atmosphere. A date that ignores a real historical event may be precisely measured and still historically misinterpreted.

CONTROLLING PRINCIPLE

Carbon-14 is measured in the present, but its age is calculated by reconstructing the conditions and events of the past.

2 Peter 3:3-7: The Historical Assumption

2 Peter 3:3-4

Knowing this first, that there shall come in the last days scoffers, walking after their own lusts, And saying, Where is the promise of his coming? for since the fathers fell asleep, all things continue as they were from the beginning of the creation.

Peter is addressing the promised return of Christ and the certainty of judgment. The scoffers reason from apparent continuity. The world seems to continue normally, so they conclude that the promised intervention of God will never occur. Their claim about the future depends upon an assumption about the past and present: all things continue as they always have.

2 Peter 3:5-6

For this they willingly are ignorant of, that by the word of God the heavens were of old, and the earth standing out of the water and in the water: Whereby the world that then was, being overflowed with water, perished:

Peter answers by identifying two divine acts their history excludes. God created by His Word. God judged the former world by water. The phrase “the world that then was” does not require another planet, nor does it prove every physical model Christians have proposed. It does establish that the history of the Earth includes conditions and an event which cannot be dismissed merely because the present world appears stable.

This passage must not be turned into a radiocarbon equation. Peter gives no isotope ratios, atmospheric pressures or reservoir corrections. Its relevance is at the worldview level. Historical reasoning becomes distorted when it admits only ordinary present processes and excludes creation or judgment before evidence is considered.

BIBLICAL BOUNDARY

Second Peter does not tell us how much the Flood changed Carbon-14. It tells us that the Flood belongs in the history we are trying to reconstruct.

What Carbon-14 Dating Is Designed to Date

Carbon-14 dating is often mentioned as if it were the general method by which scientists assign billions of years to the Earth. It is not. Radiocarbon dating is primarily applied to material that once participated in the carbon cycle: wood, charcoal, seeds, textiles, bone collagen, shells and certain residues. Its practical range is measured in tens of thousands of radiocarbon years, not billions.

The ages assigned to most rocks and the Earth involve other isotope systems such as uranium-lead, potassium-argon and argon-argon. Those methods raise their own assumptions and belong to the preceding young-Earth and old-Earth studies. This commentary stays with Carbon-14 because it provides a particularly clear example of the difference between measurement and historical reconstruction.

SAFE STATEMENT

Carbon-14 does not directly date the Earth. It dates carbon-bearing samples within a limited working range.

How the Carbon-14 Process Works

Production and entry into living things

Cosmic-ray interactions in the upper atmosphere produce secondary neutrons. Those neutrons can interact with nitrogen-14 and form Carbon-14. The radioactive carbon becomes part of atmospheric carbon dioxide. Plants take in carbon dioxide. Animals receive carbon by eating plants or by eating other animals. Carbon therefore moves through atmosphere, ocean, soil and living organisms.

While an organism is alive, it normally exchanges carbon with its environment. When it dies, ordinary biological exchange stops and the Carbon-14 already present continues to decay. The physical half-life is about 5,730 years. After one half-life, approximately half of the original Carbon-14 remains. After another, approximately half of that remainder remains.

The missing quantity in the simple explanation

A fraction remaining is meaningful only when the starting quantity is known. If four ounces remain, the cup may be half empty from an eight-ounce beginning or three-quarters empty from a sixteen-ounce beginning. The present quantity is measured. The original quantity must be known or reconstructed.

An ancient organism did not carry a label stating its initial Carbon-14 to Carbon-12 ratio. Scientists estimate that starting activity through standards, atmospheric records and calibration archives. The method therefore involves more than decay. It also involves the history of Carbon-14 production, distribution and exchange.

Conventional radiocarbon age and calendar age

A conventional radiocarbon age is calculated under agreed conventions, including a standardized initial activity and the older Libby half-life of 5,568 years. A calibrated calendar age is obtained by comparing the conventional age with a calibration curve. The two are related but not identical. A public discussion should not quote one while describing it as the other.

Three Levels That Must Not Be Blended

Level	What it says	Character of the claim
Measurement	The prepared sample contains a corrected Carbon-14 ratio or activity.	Present observation.
Calculation	Under the selected decay and reference model, that ratio corresponds to a radiocarbon age.	Mathematical inference.
Historical interpretation	The calculated and calibrated range represents the actual time since the event of interest.	Reconstruction of the past.

A measurement may be extraordinarily precise while the historical interpretation remains dependent on conditions that were not observed. Precision narrows uncertainty in what was counted. It does not automatically prove that the sample began in the expected reservoir, remained closed to carbon exchange or was calibrated against the correct history.

The familiar cash-register illustration makes the distinction clear. A cashier can count the present contents of a register perfectly. That total does not reveal the day's sales unless the starting cash, refunds, deposits and transfers are also known. The problem is not the count. The problem is reconstructing the history of the system.

The Three-Part Diagnostic

Conditions then

What was the Carbon-14 to Carbon-12 ratio when the organism lived? What carbon reservoir supplied it? Was atmospheric production similar to later production? How large was the living biosphere? Had the system reached the condition assumed by the dating model?

Events in between

What happened after death? Was the sample buried rapidly? Did groundwater introduce or remove carbon? Did the Flood mix reservoirs, bury vast quantities of carbon or alter ocean circulation? Was the sample redeposited or chemically changed?

Measurements now

What portion was selected? How was it cleaned? What contaminants were removed? What process blank was measured? How far above background was the result? Which calibration curve and reservoir correction were applied?

TEACHING REFRAIN

Conditions then. Events in between. Measurements now.

Conditions Then: The Starting Ratio

Atmospheric production was not perfectly constant

Modern radiocarbon specialists do not simply assume that atmospheric Carbon-14 remained constant. Solar activity, geomagnetic conditions and carbon-cycle changes can alter production and distribution. Calibration curves exist because atmospheric Carbon-14 varied. This is an important correction to careless creationist

language. The serious question is not whether scientists recognize variation. They do. The question is whether the reconstructed variation includes the true history of the world.

A larger pre-Flood biosphere

A common creation model proposes that the pre-Flood world supported much more living and recently living carbon than the present world. If the amount of Carbon-14 produced were distributed through a much larger quantity of ordinary carbon, the initial Carbon-14 to Carbon-12 ratio in living things could be lower. A sample beginning with a lower ratio would appear older when interpreted from a higher reference ratio.

The direction of the effect is reasonable. Its magnitude cannot be announced without calculation. A responsible model must estimate the size of the carbon reservoir, production rate, mixing rate and removal of carbon. “There may have been more vegetation” is an important question, not a completed calibration curve.

A system not yet at equilibrium

Carbon-14 is continually produced, decays and moves among reservoirs. Some young-Earth models argue that the relatively short interval before the Flood was insufficient for the system to reach the state assumed in simple equilibrium presentations. If early atmospheric Carbon-14 were lower and then rose, early organisms could yield greatly inflated conventional ages.

This proposal must explain the rate of production and the observed pattern after the Flood. It cannot merely compress every old date by the same percentage because changing atmospheric ratios would create a nonlinear relationship between radiocarbon age and calendar time.

Geomagnetic and solar conditions

A stronger geomagnetic field could reduce the cosmic-ray flux reaching the atmosphere and thereby reduce Carbon-14 production. Solar conditions can also affect production. These mechanisms are scientifically relevant, but their value depends on a defensible history of field strength and solar activity. The existence of a possible mechanism is not the same as evidence that it produced the required numerical effect.

The Waters Above and the Canopy Question

Genesis 1:6-7

And God said, Let there be a firmament in the midst of the waters, and let it divide the waters from the waters. And God made the firmament, and divided the waters which were under the firmament from the waters which were above the firmament: and it was so.

The waters above are part of the Biblical text. A vapor canopy, liquid canopy or another detailed atmospheric structure is an interpretive model. Genesis does not state the canopy’s altitude, thickness, temperature, pressure or shielding capacity. It does not give a numerical change in cosmic radiation or Carbon-14 production.

A substantial canopy might affect climate, atmospheric circulation, pressure or radiation transport. It may therefore be explored as a possible starting condition. Yet some canopy designs create serious heat and stability problems. No sermon should make salvation, Biblical authority or a young Earth dependent upon one canopy calculation.

TEXT AND MODEL

The Bible reveals waters above. The claim that a particular canopy changed Carbon-14 by a particular amount must still be tested.

Events in Between: The Flood and Carbon

Genesis 7:11

In the six hundredth year of Noah's life, in the second month, the seventeenth day of the month, the same day were all the fountains of the great deep broken up, and the windows of heaven were opened.

The Flood is not presented as an ordinary rainstorm. Scripture describes the fountains of the great deep, the windows of heaven, prevailing waters, destruction of land life and preservation in the Ark. A global catastrophe of that scope would affect the carbon cycle. The useful scientific question is not merely how many gallons of water were present. It is what that water, sediment and tectonic activity did to carbon reservoirs and samples.

Catastrophic burial

Rapid burial of immense quantities of vegetation and animals would remove ordinary carbon from active exchange. Within a creation model, this burial contributes to coal, organic-rich sediments and fossil deposits. Removing so much ordinary carbon and reorganizing the biosphere could change atmospheric ratios during post-Flood recovery.

Reservoir mixing

The atmosphere, surface ocean, deep ocean, groundwater, living biosphere and carbonate rocks do not necessarily contain the same Carbon-14 ratio. Floodwater that mixed these reservoirs could create organisms and deposits whose carbon did not match the contemporaneous atmosphere. Modern reservoir effects establish the principle that living things can inherit apparent age from their carbon source.

Volcanism and geologic carbon

Flood models often include extensive tectonic and volcanic activity. Volcanic carbon dioxide generally contains little measurable Carbon-14 and can dilute local carbon ratios. Modern volcanic settings demonstrate the mechanism. A global application must still specify how much carbon was released, how it mixed and how long the effect persisted.

Groundwater and chemical alteration

Water matters because it carries dissolved material and enables chemical exchange. Groundwater can introduce modern biological carbon, making a sample appear younger. It can introduce Carbon-14-depleted carbonate, making a sample appear older. It can remove original material or precipitate new minerals. Bone, shell, wood and fossil material require different pretreatments because their chemical histories differ.

IMPORTANT CORRECTION

Floodwater would not need to change the law of radioactive decay to change a date. It could change the starting ratio, the reservoir and the sample's later carbon history.

Reservoir Effects: Conditions Matter Even Today

A reservoir effect occurs when an organism receives carbon from a source whose Carbon-14 concentration differs from the atmosphere. Marine organisms often require a marine calibration curve and a local correction because ocean carbon exchanges slowly and mixes with older deep water. Freshwater organisms in limestone regions may incorporate old dissolved carbonate and appear hundreds or even thousands of years older than contemporary terrestrial material.

Reservoir example	Carbon source	Possible result
Marine shell	Ocean carbon mixed with older deep water.	Apparent age requiring marine and local correction.
Freshwater mollusk	Ancient limestone dissolved into water.	A living organism may already appear old.
Plant near volcanic vent	Carbon dioxide depleted in Carbon-14.	An offset unrelated to time since death.
Human with mixed diet	Terrestrial, marine and freshwater foods.	Bone may require dietary reservoir analysis.

Reservoir effects do not prove that every radiocarbon date is wrong or that a global Flood produced one universal correction. They prove the narrower and crucial point: the original carbon source affects the age calculation. Each correction is a claim about environmental history and must be supported for the sample being dated.

Calibration: An Improvement That Still Has a History

Why calibration is necessary

Because atmospheric Carbon-14 has changed, a conventional radiocarbon age is compared with archives assigned calendar ages. The resulting calibrated date is usually a range with probabilities, not a single exact year. Tree rings provide the most direct atmospheric record for the recent portion of the curve because individual rings can be measured and placed within crossdated sequences.

The strength of tree-ring calibration

Dendrochronology does more than count rings in one tree. Researchers overlap distinctive growth patterns across living trees, historical timbers and subfossil wood. Multiple specimens can reveal missing or false rings. Christians should not dismiss this body of work as though every ring were assumed to represent a year without crosschecking.

Where the evidence changes

The atmospheric tree-ring record supporting IntCal20 reaches to approximately 13,900 calendar years BP within the conventional chronology. Older portions of the curve incorporate floating tree-ring sequences and other archives including corals, lake and marine sediments and cave deposits. Those archives require chronologies, reservoir corrections or dead-carbon corrections of their own.

A continuous sequence anchored to living trees is not evidentially identical to a floating sequence positioned by matching or to a marine archive requiring a reservoir model. This does not make the older curve worthless. It means the dependencies and uncertainties deserve separate examination rather than one blanket statement about all calibration.

Is calibration circular?

It is too strong to label the entire calibration process circular. Researchers use independent checks, multiple archives and statistical models. Yet portions of a curve can depend on other dating methods and assumed chronologies. The proper task is to trace the dependency in each interval: What supplied the calendar age? What correction was used? Was radiocarbon involved in positioning the archive? What independent test confirms it?

BALANCED CONCLUSION

Calibration acknowledges that the atmosphere changed and improves dating within its adopted history. It does not make the adopted history assumption-free.

Sample Preparation, Contamination and Background

Why very old samples are especially sensitive

After many half-lives, little original Carbon-14 should remain. A tiny addition of modern carbon can then make a very old sample appear substantially younger. Laboratories clean samples, isolate chemical fractions, measure process blanks and estimate instrument background. These are serious controls, not cosmetic procedures.

No universal pretreatment proves that every sample is closed and pure. Charcoal, collagen, shell, coal, graphite and diamond have different chemical problems. A reliable interpretation requires a treatment appropriate to the material and knowledge of collection, conservation and burial history.

Questions to ask before using an unusual result

- What exact material and chemical fraction were measured?
- How was the sample collected, stored and pretreated?
- What process blank and material-specific background were reported?
- How far above background was the measured signal?
- Was the result reproduced by another preparation or laboratory?
- Could the dated carbon represent a later intrusion or an older reservoir rather than the event being discussed?

Contamination cannot be used as a magic word by either side. The conventional researcher must show that contamination or background is sufficient to explain the signal. The creation researcher must show that the measured Carbon-14 is original to the specimen. Both positions carry an evidential burden.

Carbon-14 in Coal, Fossils, Dinosaur Material and Diamonds

Why the reports attract attention

Creationist researchers have reported measurable Carbon-14 in materials conventionally assigned ages far beyond the radiocarbon range. If the signal is original and substantially above background, ordinary decay over millions of years would be difficult to reconcile with its presence. Such measurements therefore deserve careful technical examination.

Why detection alone is not enough

Accelerator mass spectrometry is extraordinarily sensitive. Near its limit, modern carbon introduced during preparation, instrument background, sample chemistry and in situ production can matter. A nonzero machine reading is not automatically a finite sample age. The signal must be distinguished from the measurement system and later carbon.

The evidential standard

Required question	Why it matters
Is the carbon intrinsic?	Later carbon may occupy cracks, pores or altered material.

Required question	Why it matters
Is the result above matched background?	Background-level signals may describe the process rather than the sample.
Was the work replicated?	Independent preparation and laboratories reduce hidden procedural causes.
Is the chain of custody known?	Preservatives, adhesives and handling can introduce carbon.
Does a quantitative model explain the amount?	Both young- and old-Earth interpretations must account for the measured value.

COMMENTARY CONCLUSION

Reported Carbon-14 in conventionally ancient material raises a legitimate question. It does not settle the age debate until original carbon, background and contamination have been adequately separated.

What the Method Assumes and What It Tests

The word assumption is often used as if it meant an unsupported guess. In science, an assumption may be a tested working condition, a convention, an estimate or an unexamined premise. The fair question is not whether assumptions exist. Every historical model uses them. The fair question is how strongly each one is supported and how sensitive the result is to its failure.

Model requirement	How it is addressed	Remaining historical question
Predictable decay	Laboratory physics and repeated measurement.	This is one of the strongest parts of the method.
Suitable initial ratio	Atmospheric records and calibration.	Did those records capture creation and Flood history?
Known reservoir	Marine, freshwater and dietary corrections.	Was the local reservoir correctly identified through time?
Limited later exchange	Pretreatment and fraction selection.	Was original carbon actually isolated?
Bounded background	Blanks, standards and replication.	Is a near-limit signal distinguishable from the process?

Two Inadequate Answers

“Carbon dating only assumes age”

This answer dismisses genuine measurement, decay physics, calibration evidence and laboratory controls. It makes a Biblical critique sound uninformed. Radiocarbon dates can be useful, especially for samples whose context, reservoir and calibration interval are well controlled.

“Carbon dating directly measures age”

This answer confuses a present isotope measurement with elapsed time. No instrument watched the organism die. The reported age follows from a calculation and historical model. The model may be strongly supported, but it remains a reconstruction.

RESPONSIBLE ANSWER

Carbon-14 dating measures a present isotope ratio and calculates an age. The strength of that age depends on how well the original conditions and intervening events are known.

Claims Ranked by Confidence

Confidence	Appropriate claims
Certain	The instrument measures present isotopes. Conventional ages are calculated. Atmospheric variation, reservoir effects, contamination and background exist.
Strong	Calibration improves conventional age estimates for suitable samples. Tree-ring evidence is strongest where chronologies are continuous and replicated. Near-limit samples are more sensitive to background.
Possible	A larger pre-Flood biosphere, different production conditions and the Flood could substantially inflate conventional ages.
Not established	The exact canopy effect, one universal Flood correction, the originality of every anomalous signal or a complete creationist calibration curve explaining every archive.

Pastoral and Teaching Guardrails

Begin with Scripture’s history, then ask what physical consequences may follow from it.
Distinguish what Genesis states from a scientific model proposed to explain it.
Acknowledge the real strengths of radiocarbon measurement and calibration.
Never claim that Carbon-14 is the method used to date the Earth at billions of years.
Do not say water changes nuclear decay merely because it covered a sample.
Do not present one surprising result as proof of an entire chronology.
Require quantitative explanations from creationist and conventional models alike.
Use uncertainty as a reason for humility, not as permission to believe anything.
Keep the gospel central. The age of a sample is not humanity’s greatest problem.

The Gospel and the Greater Judgment

Second Peter does not mention the Flood merely to settle an argument about the past. Peter uses the former judgment to warn of a future judgment. The scoffers assume ordinary life will continue. Scripture reminds them that God has acted in history and will act again.

2 Peter 3:9

The Lord is not slack concerning his promise, as some men count slackness; but is longsuffering to us-ward, not willing that any should perish, but that all should come to repentance.

The delay of judgment is not evidence that God will never judge. It is mercy. Every person has sinned and needs more than an improved chronology. Jesus Christ died for our sins, was buried and rose again. The

refuge God provides is Christ. Salvation is received by repentance and faith in Him, not by achieving scientific certainty.

Noah did not save himself by calculating the volume of Floodwater. He entered the refuge God provided. In the same way, a person is not saved by winning the age debate. The purpose of Biblical reasoning is not intellectual pride. It is to bring every thought under truth and every sinner to the Savior.

Final Commentary Conclusion

Carbon-14 dating is neither an arbitrary guess nor a direct stopwatch reading. It measures a real physical property in the present. The age assigned to that property is calculated through assumptions and evidence concerning original Carbon-14, reservoir source, decay, sample history, contamination and calibration.

Modern science already recognizes that atmospheric ratios vary, reservoirs differ and samples can be contaminated. Those corrections strengthen the method. They also demonstrate the central point of this study: environmental conditions and historical events matter. If Genesis records a different pre-Flood world and a global Flood, those realities belong in the reconstruction.

A Biblical model must do more than list possibilities. It should calculate effects, explain the observed record and state uncertainty honestly. A conventional model must do more than point to a precise instrument. It should defend the chronology and corrections that connect the instrument to the past.

The Christian can respect honest measurement without surrendering Biblical history. We can examine the evidence, correct weak arguments and admit where a model remains incomplete. God was present at creation. God witnessed the Flood. God made the physical order we measure. His truth will not finally contradict itself.

FINAL COMMENTARY PRINCIPLE

The carbon is measured. The age is interpreted. Conditions then, events in between and measurements now must all be examined under the authority of God's Word.