Radiocarbon Dating

Its Limitations and Usefulness

"Combining the effects of planks from these three trees, we find that a site which was actually occupied for 535 years (from 2130 to 1595 BCE) appears—using conventional radiocarbon dating calculations—to have been occupied for 31,640 years (from 36,900 to 5,260 BCE)." - Page 16

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HOW ACCURATE IS RADIOCARBON DATING?

Radiocarbon dating is frequently used to date ancient human settlements or tools. These dates are often claimed to be very precise. But how accurate is radiocarbon dating?

How does radioactive carbon dating work? What are its limitations? What effect would the declining strength of the earth's magnetic field and a catastrophic worldwide flood have on radiocarbon dates? These are all questions that need to be examined carefully.

BASIS OF RADIOCARBON DATING

Radiocarbon dating compares the amount of normal carbon with the amount of radioactive carbon in a sample. The normal carbon atom has six protons and six neutrons in its nucleus, giving a total atomic mass of 12 (Carbon-12, usually abbreviated to ^{12}C). It is a stable, non-radioactive atom that will not change its atomic mass under normal circumstances.[1] The radioactive carbon also has six protons, which makes it function as carbon, but it has eight neutrons in its nucleus, giving it a total atomic mass of 14. This excess of neutrons compared to protons in the atom make it unstable, so it will break down, releasing nuclear energy. This energy release is called radioactivity.

The radioactive carbon (Carbon-14, aka ^{14}C) is a carbon isotope usually formed in the upper atmosphere as a byproduct of cosmic radiation. Cosmic rays are atomic nuclei from outside our solar system, moving at enormous speeds. When they strike ordinary atoms in the upper atmosphere, the cosmic rays smash them apart. Some fragments produced in this way are neutrons. Some of these neutrons then collide with nitrogen atoms. This collision is less destructive than the initial collision that produced them. Usually a

[1] About 1% of natural carbon has an extra neutron, forming Carbon-13, which is also stable and non-radioactive.

proton is knocked out of the nitrogen atom's nucleus and is replaced with the neutron. The proton takes an electron with it and becomes an atom of hydrogen. The ^{14}N nitrogen atom, which began with seven protons and seven neutrons, is left with only six protons and eight neutrons. As the number of protons dictates the chemical nature of an atom, the atom now behaves like a carbon atom, and is designated as ^{14}C. However, because it has too many neutrons for the number of protons it contains, it is not a stable atom. Every 5,730 years, approximately half of these radioactive ^{14}C carbon atoms spontaneously convert themselves back into nitrogen by beta decay. This means that one of the neutrons emits an electron and an electron antineutrino, converting it into a proton. This decay restores the atom back into a normal non-radioactive nitrogen atom with seven proton and seven neutrons. Restated, the half-life of radioactive carbon is 5,730 years, so in two half-lives (11,460 years), only one-fourth of the radioactive carbon would be left.

As you would expect, radioactive carbon (^{14}C) is quite rare. Only about one and a half out of every trillion carbon atoms is ^{14}C. However, it is present in all living organisms. The ^{14}C created in the upper atmosphere reacts with oxygen to become carbon dioxide. The carbon dioxide is absorbed by plants, and the plants are eaten by animals, thus contaminating every living thing on earth with radioactive carbon.

Once an organism dies, it stops absorbing ^{14}C. As time passes, the ^{14}C in its tissues is converted back into nitrogen. If we know what the original ratios of ^{14}C to ^{12}C were in the organism when it died, and if we know that the sample has not been contaminated by contact with other carbon since its death, we should be able to calculate when it died by its ^{14}C to ^{12}C ratio. Figure 1 illustrates the normal rate of ^{14}C decay in an isolated sample with a known initial radiocarbon level. But in actual practice, **we know neither** the original ratios nor if the specimen has been contaminated and are forced to make what we hope are reasonable assumptions.

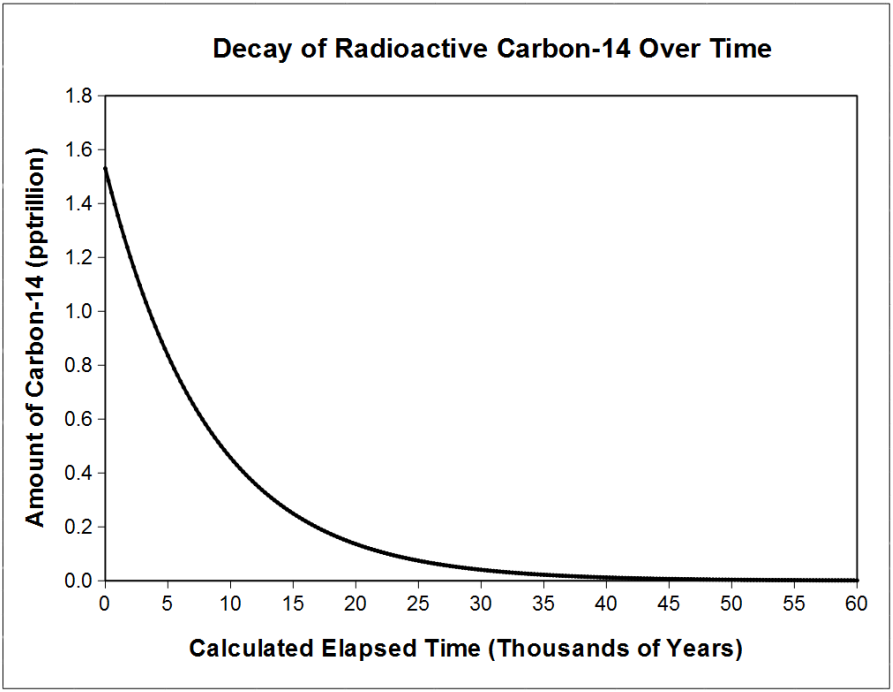

Figure 1: Ideal Loss of Radiocarbon-14 under stable conditions

The tiny initial amount of ^{14}C, the relatively rapid rate of decay (as stated, the half-life of ^{14}C is currently about 5,730 years) and the ease with which samples can become contaminated limits radiocarbon dating results to about 80,000 years. It follows that the older a date is, even within this 'limit', the greater are the doubts about the date's accuracy.

PROBLEMS WITH RADIOCARBON DATING

The old method of determining $^{14}C/^{12}C$ ratios required counting the number of radioactive beta decay emissions from a quite large sample over an extended period. During the last 60 years, a new

method of determining these ratios has been developed. It uses accelerator mass spectrometry (AMS) to determine the amounts of ^{14}C, ^{13}C and ^{12}C in a small sample which is vaporised in the test. The ions produced are forced into a magnetic field where the differing mass of the carbon isotopes causes a different deflection, allowing the quantity of each isotope to be measured. This method is rapid and more accurate than the older counting technique. The sensitivity of the mass spec method should allow the dating of objects up to 95,000 years old. As noted above, in practice this is not achieved.

A test by the British Science and Engineering Research Council has shown that the accuracy of the AMS method is overrated. They found large variations in the radiocarbon 'dates' of objects of known age, which were sent to 38 radiocarbon 'dating' laboratories around the world. Thirty-one of the labs gave results that the British group called unsatisfactory. Their results were 'two to three times less accurate than implied by the range of error they stated.' They thought the variations might have been caused by poor laboratory standards allowing contamination of the samples.

Some scientists believe the problem runs far deeper than this, as the following quote shows:

> In the light of what is known about the radiocarbon method and the way it is used, it is truly astonishing that many authors will cite agreeable determinations as "proof" for their beliefs...
>
> Radiocarbon dating has somehow avoided collapse onto its own battered foundation, and now lurches onward with feigned consistency. The implications of pervasive contamination and ancient variations in carbon-14 levels are steadfastly ignored by those who base their argument upon the dates.
>
> ...[Some authors have said] they were "not aware of a single significant disagreement" in any sample that had been dated at different labs. Such enthusiasts continue to claim, incredible though it may seem, that "no gross

discrepancies are apparent". Surely 15,000 years of difference on a single block of soil is indeed a gross discrepancy! And how could the excessive disagreement between the labs be called insignificant, when it has been the basis for the reappraisal of the standard error associated with each and every date in existence?

Why do geologists and archaeologists still spend their scarce money on costly radiocarbon determinations? They do so because occasional dates appear to be useful. While the method cannot be counted on to give good, unequivocal results, the numbers do impress people, and save them the trouble of thinking excessively. Expressed in what look like precise calendar years, figures seem somehow better—both to the layman and professional not versed in statistics—than complex stratigraphic or cultural correlations, and are more easily retained in one's memory. "Absolute" dates determined by a laboratory carry a lot of weight, and are extremely useful in bolstering weak arguments...

No matter how "useful" it is though, the radiocarbon method is still not capable of yielding accurate and reliable results. There are gross discrepancies, the chronology is uneven and relative, and the accepted dates are actually selected dates. This whole blessed thing is nothing but 13th century alchemy, and it all depends upon which funny paper you read.

Robert E. Lee, *Radiocarbon: Ages in Error. Anthropological Journal of Canada*, vol. 19 (3), 1981, pp. 9-29

Though there have been improvements in the technology since then, Lee's general criticism remains valid. There is a trend towards older objects having less ^{14}C in them than younger objects, but clearly there are serious problems in converting the $^{14}C/^{12}C$ ratios of 'old' items into precise dates.

However, there are other factors which make the dating problems even worse. I believe that the $^{14}C/^{12}C$ ratios in the past were drastically altered by two powerful factors. These factors are changes in the strength of the Earth's magnetic field and changes in the total amount of normal carbon available to organisms. Changes which cause lower initial quantities of ^{14}C and higher levels of ^{12}C mean that radiocarbon date calculations which assume constant conditions in the past give falsely "old" dates.

The Earth's Magnetic Field

A major force altering the formation rate of ^{14}C is the earth's magnetic field.

This field has a dramatic effect on cosmic radiation heading towards the earth. The magnetic field works like a huge bumper-bar. When the radiation strikes the field, it is bent towards the earth's polar regions. Some radiation is deflected so much that it totally misses the earth. Much of the remaining radiation is channelled into the relatively unoccupied polar regions. As the magnetic field extends far beyond earth's atmosphere, some cosmic radiation never gets a chance to produce ^{14}C. Increasing the strength of the magnetic field will increase the shielding effect, reducing the amount of ^{14}C produced.

It is an accepted fact that the measurements of the Earth's magnetic field strength show that the field is rapidly growing weaker. Professor Thomas G. Barnes, who has studied earth's magnetic field, says in *Origin and Destiny of the Earth's Magnetic Field*, that the magnetic field is declining in strength exponentially. Prof. Barnes, who has developed the earlier work of Horace Lamb, demonstrates mathematically that the observed exponential decline in the strength of the earth's magnetic field is exactly what one would expect if earth's magnetic field is generated by an enormous electric current flowing in the earth's iron core. The decline is due to a continuous loss of electrical energy caused by electrical resistance in the core.

If this type of decline has been occurring in the past, the field

loses half of its strength every 1400 years. Scientific research suggests that an increase in the earth's magnetic field to 100 times its present strength would result in complete shielding from cosmic radiation. As a rough approximation, I have allowed a 1% decrease in ^{14}C formation for each doubling of the current field strength in the calculations of radiocarbon dates. As **Table 1** shows, the effect of the magnetic field increase does not become large until times earlier than Noah's Flood (about 2348 BCE[2]).

However, as we go even further back in time, the effect of the magnetic field becomes staggering. The field strengths for dates as recent as 20,000 BCE are so intense that the electric current required to produce such a field would destroy the earth's core. Barnes estimates that the heating effect of the current required would be about 250 million times what it is today. Unless one is prepared to believe that the magnetic field in the past was stable—an idea that conflicts with all the direct observational evidence—one must accept that the earth is much younger than evolutionists claim it to be. The rapid decline of earth's magnetic field makes a recent beginning point for the field (and thus the earth) a necessity.

The increased magnetic shielding of the earth's surface would deflect most of the dangerous charged particles, making radiation-induced cancers and mutations rarer Pre-Flood than they are today.

[2] We use BCE (Before Common Era) instead of BC (Before Christ) as Christ was born in 4 BC, making BC an inaccurate dating system.

Table 1: Possible Effect Of Earth's Decreasing Magnetic Field on Carbon-14 production in the upper atmosphere. Using current rates of decline for the Earth's Magnetic Field, less than ten thousand years ago the field would have been strong enough to have totally stopped the formation of radioactive carbon.

Year (BCE yrs neg.)	Magnetic Field Strength (Current Field = 1)	Effect On ^{14}C Production (Reduction in %)
1990	1.0	0.0
1290	1.4	0.4
590	2.0	1.0
-109	2.8	1.8
-459	3.4	2.4
-809	4.0	3.0
-1509	5.7	4.7
-1859	6.7	5.7
-2209	8.0	7.0
-2284	8.2	7.2
-2348	9.1	8.1
-2909	11.3	10.3
-3259	13.5	12.5
-3609	16.0	15.0
-4004	19.6	18.6
-7459	107.6	>100

Removal Of Carbon From The Biosphere

The worldwide Flood which occurred in the days of Noah (Genesis chapters 6 to 8) buried most of the organisms which had lived on the earth before the Flood. The burial of these organisms also meant the burial of the carbon that they contained, leading to

formation of our coal, oil and natural gas deposits. As the rate of ^{14}C formation is independent of the levels of normal carbon, the large drop in available ^{12}C would not have reduced the rate of ^{14}C production. Even if the rate of ^{14}C formation had not increased after the Flood, there would have been a fundamental shift in the ratio towards a relatively higher radiocarbon content. Conversely, all of the additional ^{12}C available prior to the Flood would have a strong dilution effect on the $^{14}C/^{12}C$ ratio, making the remains of all pre-Flood organisms appear much older than they actually are.

The amount of ^{14}C present in the pre-Flood environment is also limited by the relatively short time (less than 1700 years) which had elapsed between Creation and the Flood and the intense geomagnetic field. Even if one is generous, the maximum amount of ^{14}C existing at the beginning of the Flood would be less than half of its present concentration, assuming there was no radioactive carbon in the original Creation.

Various estimates place the volume of non-radioactive ^{12}C and ^{13}C biologically available before the Flood at 40 to 170 times its present volume.[3] We will use 60 times, as this fits reasonably within this range, suggesting a likely $^{14}C/^{12}C$ ratio of 0.41/60 = 0.0068 of today's ratio at the onset of the Flood. This ratio would yield a radiocarbon 'age' of at least 40,500 years old for an object which may actually only be about 4,400 years old.

The last 150 years have seen this effect occur in reverse. Our massive consumption of fossil fuels is releasing the carbon which has been locked up in the Earth's crust for the last four or five millennia.

[3] The much larger amount of carbon available before the Great Flood reflects a world in which there was a more moderate climate throughout the world, and one in which there were only shallow seas and low mountains when compared to our current world. It would be a world in which there were only small deserts, and virtually all of the mountains would be below the tree line, and thus covered in forests. Likewise, there would have been smaller areas of grasslands, and much larger and denser forests. The shallow seas would support an enormous range of life. Indeed, today we only have a small remnant of the astounding variety of life that existed until the Flood. The 'missing' carbon became our coal, oil and natural gas.

This carbon is almost pure non-radioactive carbon isotopes and has been decreasing the $^{14}C/^{12}C$ ratio. These ratios have also been altered in the opposite direction by the addition of man-made radioactive carbon to the biosphere because of nuclear explosions and experimentation over the last 80 years. Massive solar flares also emit additional cosmic rays, and thus create additional ^{14}C, though this effect is usually not large.

Z-Pinch Radioactive Carbon-14

Z-pinch as a source of radioactive materials is explored in Walt Brown's *In The Beginning* book, available at https://www.creationscience.com/onlinebook/Radioactivity3.html. Z-pinch ^{14}C is known to be created by lightning, though the quantity produced is not large. However, it is possible that the materials which were released when the Fountains of the Great Deep were broken open may have included quite significant amounts of Z-pinch formed carbon-14. This ^{14}C would have mixed with the pre-Flood carbon and contaminated it to various extents. The internal tissues of large logs, etc, would have likely absorbed less of it than small animals and leaves, etc. This would result in different pre-Flood samples yielding different radiocarbon ages, even though they all died during the same year.

EFFECT ON RADIOCARBON DATING

The total effect that the magnetic field, the large change in the available mass of carbon, and Z-pinched ^{14}C might have on the $^{14}C/^{12}C$ ratios and thus on radiocarbon dating are shown in the Radioactive Carbon Dating Graph and the Radiocarbon Date Table.

The values have been calculated using a computerised simulation which assumes the ratio of Carbon-14 to Carbon-12 at the start of the Great Flood was 0.0005 of what it is today. It also assumes that the $^{14}C/^{12}C$ ratio slowly came to its current ratio over a period of two

thousand years, using a Hoerl function to model the accumulation of ^{14}C, which would initially decrease radiocarbon 'dates' fairly rapidly. This increase rate would slow over time as the greater amounts of ^{14}C present would lead to greater amounts of ^{14}C decaying, eventually balancing the amount produced. The magnetic field, burial of most carbon and production of Z-pinched ^{14}C effects have all been incorporated in these values as stated above.[4]

The graph plots the true date against the calculated radiocarbon 'date', based on the idealised stable decay system presented in Figure 1. As we go farther back in time, the difference between the two dates becomes greater. The graph shows a relatively smooth variation before 2348 BCE, the year of the Great Flood. During the Flood, the release of Z-pinched ^{14}C and burial of most of the ^{12}C and ^{13}C rapidly alter the apparent dates. After the Flood, there is a gradual increase in the production rate of carbon-14 as the magnetic field strength wanes. As in the pre-Flood situation, the increase initially rapidly decreases radiocarbon 'dates', and then slowly begins to stabilise. Assuming the Great Flood was in 2348 BCE, during the two hundred-year period from 2350 BCE to 2150 BCE, the difference between the two radiocarbon dates shrinks from 42,500 years to 25,000 years Before Present (BP), a calculated difference of 17,500 years. The Radiocarbon Date Table (Appendix 1) shows the effect more clearly.

Our calculations estimate the $^{14}C/^{12}C$ ratios at different times in the past, but then reports that using radiocarbon 'dates' based on the standard dating convention which assumes that the ratio has been uniform throughout the past, as shown in Figure 1. This allows you to compare the usual reported radiocarbon 'dates' with what are likely the actual dates of the material.

Though the atmospheric radiocarbon ratio changes are quite dramatic, these changes were only slowly incorporated into the massive amount of almost pure common carbon found in the

[4] The modelling was done with LibreOffice Calc and CurveExpert Pro. We are working on producing a C#.net computer program to make the model more accessible and will place it on our website.

Biosphere.[5] Thus there would be a substantial delay in reaching the point where the $^{14}C/^{12}C$ ratios in the organisms would exactly match the atmospheric ratios. This would especially be the case in the first century or two after the Flood, where individual samples could appear to date much older than our calibration indicates.

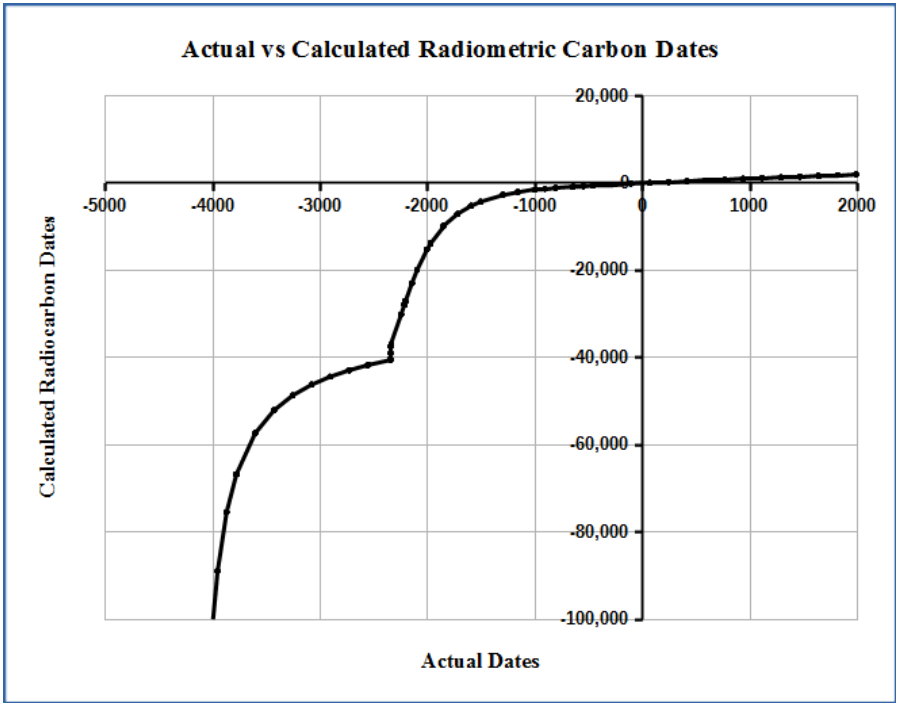

Figure 2: Graph of True versus Calculated Radiocarbon Dates

- highlighting the effects of Creation and the Great Flood on these calculations.

Another factor which may be involved in all these events has been proposed by physicist Dr Russell Humphreys. He has suggested that the main driving force behind many of the Flood processes may have

[5] The biosphere is all the microorganisms, plants and animals living on earth plus the soil, water and air that they occupy.

been a temporary relaxation of the nuclear binding forces.[6] Such a 'relaxation' would allow an enormous increase in the radioactive decay rates of all unstable atoms. This acceleration of radioactivity would result in bulk heating of all rocks containing moderate to high levels of radioactive material. This heat could vaporise massive amounts of water, some of which would condense as snow and form gigantic glaciers. The heat would also liquefy nearly molten rocks, causing vast volcanic eruptions and assist the sliding of tectonic plates during and after the Flood. The rapid accumulation of these radioactive decay end products would give the rocks an appearance of enormous age.[7]

This scenario would also explain the age gradient seen in sedimentary rock strata. If the accelerated decay rate lasted the entire 150 days that the Ark was afloat (when the water would provide effective shielding for its occupants), it would cover the most active phase of sedimentation during the Flood.

If such accelerated decay actually occurred, it is probable that whatever ^{14}C had existed before that time would have been converted back into nitrogen.

Walt Brown's alternative Hydroplate Theory proposes that most of the radioactive elements were created and "aged" during the sub-crustal Z-pinch events at the start of the Flood. Either theory means that the "deep time" indicated by radioactive decay is an illusion that would only be valid if radioactivity was always only occurring at today's slow rates.

Heartwood and Frozen Time

The way that trees form heartwood as they grow allows them to preserve a biological record of the $^{14}C/^{12}C$ ratios. Sapwood layers

[6] Russell Humphreys, in *Radioisotopes and the Age of the Earth* and *Radiocarbon, Creation and the Flood*, Lecture, Creation Science Foundation

[7] In long-term dating, isotopes of heavy metals such as Uranium are usually involved, with decay half lives normally being in the millions of years.

(the living xylem and phloem) are the tree's transportation system. Xylem carries the supply of water and minerals that the roots extract from the soil up to the leaves. Leaves absorb carbon dioxide and oxygen from the air and combine them with the minerals and water from the roots. With the added input of energy from the sun, the leaves create a variety of sugars and other organic compounds that the tree requires. The phloem layer, just inside the bark, carries this food to the rest of the tree. As the tree grows, the inner layers of xylem are sealed up and die, forming heartwood. New sapwood layers form each year to replace the 'lost' sapwood.

When the xylem turns into heartwood, it stops gathering radiocarbon. Its radiocarbon content then begins to decrease. In a stable situation where the atmospheric $^{14}C/^{12}C$ ratios remain unchanged during the life of the tree, these differences make only a small change in the radiocarbon "dates" of different parts of the tree. However, after the Great Flood, the ratios were not stable. A look at the different dates that would be given by samples taken from various layers of trees tells the story:

Early Post-Flood Trees

We will look at the radiocarbon 'dates' that would result from samples taken from different parts of a tree that began growing in 2345 BCE (BC), possibly two years after the Great Flood. Let's assume that the tree grew for 250 years, when it was cut down and used for building materials.

A plank split from heartwood formed in 2100 BCE (near the outside of the tree) would have a radiocarbon date of about 19,900 BCE. Another plank cut from heartwood formed in 2220 BCE (halfway to the centre of the trunk) would have a radiocarbon date of 27,900 BCE. A final plank split out of the centre of the tree, made of heartwood that had formed in 2340 BCE, would give a radiocarbon date of 36,900 BCE.

The planks made from this one tree would give a range of radiocarbon 'dates' from 19,900 to 36,900 BCE, a difference of

17,000 radiocarbon 'years'. If pieces of these three planks were later found by archeologists, they could claim that the site had been occupied for 17,000 years, from about 37,000 to 20,000 BCE. The reality might be that the site was only occupied for fifty years from 2130 to 2080 BCE.

Assuming that the site was genuinely occupied for several hundred years, we can look at the effects that another tree which started growing in 2105 BCE would have on radiocarbon dates. We will assume that this tree lived for 260 years before it was cut down.

This time, a plank split from heartwood near the outside of the tree, formed in 1850 BCE would have a radiocarbon date of about 9,800 BCE. Another plank cut from heartwood formed in 1975 BCE (halfway to the centre of the trunk) would have a radiocarbon date of 13,870 BCE. A final plank split out of the centre of the tree, made of heartwood that had formed in 2100 BCE, would again give a radiocarbon date of 19,900 BCE.

The planks made from the second tree would give a range of radiocarbon 'dates' from 19,900 to 9,800 BCE, so it would make an occupation spanning 260 years to appear to be 10,100 years long.

Combining the effects of planks from these two trees, we find that a site which was actually occupied for 285 years (from 2130 to 1845 BCE) appears—using conventional radiocarbon dating calculations—to have been occupied for 27,100 years (from 36,900 to 9,800 BCE).

As the $^{14}C/^{12}C$ ratios continued to normalise towards today's ratio, these effects would lessen. This can be shown with a third log, which began growing in 1845 BCE and was cut down in 1595 BCE at 260 years old.

This time, a plank split from heartwood near the outside of the tree, formed in 1600 BCE would have a radiocarbon date of about 5,260 BCE. Another plank cut from heartwood formed in 1725 BCE (halfway to the centre of the trunk) would have a radiocarbon date of 7,100 BCE. A final plank split out of the centre of the tree, made of heartwood that had formed in 1850 BCE, would again give a radiocarbon date of 9,800 BCE.

The planks made from the third tree would give a range of radiocarbon 'dates' from 9,800 to 5,260 BCE, so an occupation spanning another 260 years would appear to be 4,500 years long.

Combining the effects of planks from these three trees, we find that a site which was actually occupied for 535 years (from 2130 to 1595 BCE) appears—using conventional radiocarbon dating calculations—to have been occupied for 31,640 years (from 36,900 to 5,260 BCE).

These examples show the dramatic effect that changes in the $^{14}C/^{12}C$ ratio caused by the Great Flood could have on radiocarbon dating results. It is difficult to prove that the $^{14}C/^{12}C$ ratios in the distant past have not undergone variations similar to those proposed here, as ancient logs that show an enormous span of years from one point to another are simply dismissed as contaminated samples.

The Bible shows that the longest any site in the world has been occupied is about 4,367 years,[8] and that such a site could provide radiocarbon 'dates' indicating that it was occupied for about 40,000 years. This reduction in proposed timelines does not, in any way, reduce the real comparative longevity of the time a people-group have occupied the site, nor its importance. It merely realigns it with the actual dates. The Bible timeline also explains why we have no written histories going back tens of thousands of years—the tens of thousands of years are an illusion.

Pre-Flood/Flood Radiocarbon Dating

It can also be seen from the material presented so far that there was a small amount of radioactive carbon produced during the years preceding the Flood, plus some additional radioactive carbon actually produced during the Flood. If so, now that the AMS radiocarbon instruments are far more sensitive, they should be able to detect these tiny amounts of ^{12}C in the plants and animals which lived at the end

[8] It is likely that this site would be near Mount Judi, in the Mountains of Ararat in south-eastern Turkey, as explored in our *Books of Moses—Fact or Fiction?* Series.

of the pre-Flood world and were buried during the Flood about 4,500 years ago. These buried organisms are known today as fossils, and coal and many other fossils still contain carbon that can be tested. According to uniformitarians, these fossils are many millions of years old and all of the radioactive carbon they contained should have all decayed back into nitrogen within 150,000 years. But do they detect such ^{12}C?

Dr. John Baumgardner, in his monograph *14C Evidence for a Recent Global Flood and a Young Earth*, in *Radioisotopes and the Age of the Earth*, Vol 2, documents dozens of radiocarbon 'dates' made on coal and the remains of other organisms found in sediments which have been 'dated' from ten million to several hundred million years old. The carbon in these samples, irrespective of the supposed age of the sediments, typically have radiocarbon ages of 44,000 to 57,000 years. As Figure 2 shows, this is exactly what we would expect from organisms that all died in the Great Flood and were buried within weeks to months of each other. The older dating coal is likely samples taken from the inner heartwood of large trees that were uprooted and buried in the Flood. These results totally contradict the long ages commonly claimed for these sediments, and are totally consistent with a Biblical Young Earth/Great Flood scenario.

Another interesting example is some wood which was found encased in a lava flow at the Crinum coal mine in Queensland, Australia. The lava was Potassium-argon 'dated' at 44 million years old, but the wood within it was dated at 30 to 45 thousand years old. (*https://creation.com/radioactive-dating-in-conflict*)

And how about dinosaurs? Have any of the less fossilised dinosaur remains that still contain carbon been radiocarbon dated? Indeed they have, and they have yielded carbon 'dates' from about 22,000 to 39,000 years, again fitting quite well into the Biblical radiocarbon dating model presented in this article. (*https://creation.com/c14-dinos*)

Diamonds, the hardest and most impervious version of carbon, are claimed to be formed at least a hundred kilometers below the

earth's surface about a billion years ago, according to conventional geologists. So they should contain absolutely no radioactive carbon. Yet diamonds have consistently been found to contain enough ^{14}C to 'date' at about 58,000 years old, similar to the coal and carbon-containing fossils mentioned above. Once again, the "billion years" is impossible. See *https://creation.com/diamonds-a-creationists-best-friend* It is instead more probable that they were formed during the incredible tectonic events of the Great Flood, as proposed in the Hydroplate Theory (*creationscience.com*).

CONCLUSION

The carbon dating calibration we have presented in this article is based on several assumptions that are estimates, and may be somewhat inaccurate. But none the less, we think our calibration is in the right ballpark, as the conventional calibration ignores many vital influences on the radiocarbon/normal carbon rations such as the relatively recent Creation, the effect of the declining magnetic field, the enormous amount of carbon removed from the biosphere in the Great Flood and the radioactive carbon released when the Fountains of the Great Deep were broken open.

Additionally, in the early post-Flood years, there would have been many significant local variations in the amount of pre-Flood carbon present at the surface, the Z-pinched ^{14}C, and the gradual flow of newly created atmospheric ^{14}C into the plants, oceans and their animals. These would all manifest as local variations in the radiocarbon dates. Even the conventional dating notes that there are variations due to solar flares and slow transfer of ^{14}C to marine molluscs, etc.

We have demonstrated that there are definitely reasons to doubt the accuracy of the radiocarbon dates that are so widely used to 'prove' the age of an artefact. Any attempt to use these grossly inflated 'dates' to 'prove' that the Biblical timeline is wrong is based on biased humanistic reasoning. The quotes given earlier, from

authorities working in the radiocarbon dating field, show that even without invoking major changes in the past there are good reasons to be very sceptical about radiocarbon dates.

Radiocarbon Dating is useful to compare the relative ages of equivalent samples where it is likely the samples have all been exposed to similar environmental conditions. However, for older samples, the data can only suggest that Sample A is probably older than Sample B, etc. It is merely speculation when the results are used to 'establish' an absolute date for older material, as the initial $^{14}C/^{12}C$ ratio is simply not known.

This edition revised by Bruce Armstrong, M. App. Sci.

Appendix

Radiocarbon Date Table

Actual Date	Radiocarbon 'Date'	Actual Date	Radiocarbon 'Date'
2020	2,020	-1850	-9,813
1990	1,990	-1859	-10,053
1815	1,815	-1975	-13,866
1640	1,640	-2009	-15,283
1465	1,465	-2100	-19,898
1290	1,289	-2150	-22,986
1115	1,112	-2209	-27,105
940	934	-2220	-27,920
765	756	-2250	-30,191
590	576	-2340	-36,945
415	394	-2347	-37,426
240	210	-2347.5	-38,973
65	23	-2348	-40,519
-109	-166	-2350	-40,530
-284	-361	-2559	-41,729
-459	-563	-2734	-42,935
-555	-707	-2909	-44,401
-650	-850	-3084	-46,248
-809	-1,117	-3259	-48,685
-909	-1,331	-3434	-52,109
-1009	-1,592	-3609	-57,381
-1159	-2,101	-3784	-66,783
-1300	-2,764	-3875	-75,461
-1509	-4,284	-3959	-89,002
-1600	-5,262	-4004	-100,791
-1725	-7,105		

Some Other Resources Available at https://chcpublications.net/

Publications

The Holy Bible - CHCoG Version - This translation from the original Hebrew and Aramaic is accurate and readable, giving you a clear understanding of how the New and Old Covenants are interlocked and God's message to you.

Everlasting Life is God's Gift - Does the Bible teach that you have everlasting life? If not, how can you receive God's gift of immortality as His child?

Books of Moses - Fact or Fiction Series - Are the miracles recorded in Genesis and Exodus our true history? Do the facts support Special Creation or the Big Bang & Evolution scenarios? What about the Flood, Babel and the Exodus?

The Ten Commandments - What are God's Ten Commandments? How do they guide us in our relationships with God, our family and our neighbours? Shows how obedience to Jehovah's Instructions would result in true civilization.

Sex, God and Families - Pamphlet exposing the dangers of sexual immorality and outlining the benefits of following God's sexual principles.

Eastern Meditation and Jeshua the Messiah - Recounts the experiences of a CHCoG member who became a Christian while practising Eastern Meditation.

Animals in the Bible- Does God love His animals? Do they have souls and spirits? Are they intelligent and responsible for their decisions?

What is God's Name? - How can we know what God's Name is and how to Pronounce it? Does the Bible teach us to use God's Name?

God's Calendar and the Sign of Jonah - Shows how God's Calendar reveals that Jeshua (Jesus) truly kept the Sign of Jonah, His proof that He is the Messiah.

The Sabbath in Scripture - Has God's Seventh-day Sabbath been 'done away with'? What does the Sabbath mean, and does God want us to keep it?

Spirit, Soul and Body - Take a deeper look at the Bible's teachings about the composition of human beings and the roles of our soul and spirit.

Jeshua the Messiah: Is He the Son of God or Part of a Trinity? - Explores the relationships between God the Father, our Lord Jeshua, the Holy Spirit and us.

Unclean Animals and Food - What does the Bible teach about unclean animals? Does the New Covenant allow us to eat unclean meat?

Rome's Challenge: Why do Protestants Keep Sunday? - This Roman Catholic article proves there is no scriptural basis for changing the seventh-day Sabbath to Sunday, and shows that the Roman Catholic church made the change.

Software

Calculated Biblical Calendar - Calculates dates of Annual Holy Days, Crucifixion, Flood, Creation: allows you to test the new moon visibility locally.

Radiocarbon Dating - Calculates the effects that changes in the geomagnetic field and radiocarbon/carbon ratios, etc, on radioactive dating.

Free Library

We have a large range of Christian and Creationist literature, CDs and DVDs that are available for borrowing within Australia. Please contact us for our list.